

DOCTORAL THESIS

The Effect of Regular Listening to Preferred Music on Pain, Depression and Anxiety in Older People in Residential Care

Costa, Fiona

Award date:
2015

Awarding institution:
University of Roehampton

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal ?

Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

**The Effect of Regular Listening to Preferred Music on Pain,
Depression and
Anxiety in Older People in Residential Care**

by

Fiona Costa MA, ARCM

**A thesis submitted in partial fulfilment of the requirements for the
degree of PhD**

**Department of Education
University of Roehampton**

2015

Abstract

Music can be particularly beneficial for older people, many of whom have conditions that compromise their quality of life. It can be accessed irrespective of cognitive or physical capacity and can be enjoyed until the end of life; it is inexpensive and readily available. However, despite the widespread belief in music's therapeutic effects, it has proved difficult to accumulate sufficient evidence to satisfy health professionals of its potential benefits to health and wellbeing. This research evaluates the effect of listening to preferred music on the wellbeing of older people living in care homes. One hundred and thirteen participants were randomly allocated to either an experimental or a control group. The former, in addition to their usual routine, listened to 30 minutes of preferred music over a three-week period. Weekly assessments, using validated measures with some adaptation, evaluated levels of pain, depression and anxiety, each a common condition in this population. On completion of the programme, the groups switched over, thus enabling all participants to receive the potential benefits of the music intervention. Results showed statistically significant decreases for each dependent variable with the size of the effect being greater for depression and anxiety than for pain. There were no significant improvements for those in the control group. Thematic analysis of the qualitative data gave further insight into the various ranges of response to the music intervention and identified those most likely to benefit from regular listening: those who listen frequently, have had some previous engagement with music and who regard music as important. It also raised awareness of the challenges that may arise at this stage of life. It was concluded that listening to preferred music is able to benefit many of the care home population, although not all will benefit to the same degree.

Acknowledgements

I would like to thank the various people who have helped me over the last four years.

Professor Adam Ockelford has been unfailingly generous with his time, his expertise and his encouragement in his supervision of my research.

Professor David Hargreaves has been invaluable for his contribution to the final editing and completion of the thesis.

Dr Nigel Marshall played an important part in the formative stages of the research design and data collection.

My family: Ken, Georgina, Nicholas, Charles, Henry and Claudia. They have all been generous with their patience, interest and good humour.

Table of Contents

Abstract.....	1
Acknowledgements	2
Table of Contents.....	3
List of Figures.....	7
List of Tables.....	9
List of Appendices.....	10
Ethical Information	10
1 Chapter One	11
1.1 Introduction.....	11
1.1.1 Background to the research study	11
1.1.2 Personal background to the study	15
1.1.3 Outline of the thesis.....	16
2 Chapter Two	17
2.1 Literature review part one: issues of old age.....	17
2.1.1 Introduction.....	17
2.1.2 Issues of old age	17
2.1.3 Loneliness in older people	21
2.1.4 Depression in older people	26
2.1.5 Chronic pain in older people	31
2.1.6 Anxiety in older people	39
2.2 The care home population.....	41

3	Chapter Three.....	44
3.1	Literature review part two: the therapeutic use of music.....	44
3.1.1	Theories for the relief of pain and the improvement of wellbeing.....	44
3.1.2	The therapeutic use of music.....	49
3.1.3	Summary	77
4	Chapter Four.....	80
4.1	Research methodology and pilot studies.....	80
4.1.1	Rationale for methodology.....	80
4.1.2	Some methodological challenges related to music interventions and older people ..	85
4.1.3	Research design and methodology	99
4.1.4	The overall research design	99
4.1.5	Summary of the methodology.....	100
4.1.6	Ethical considerations.....	101
4.2	Pilot studies	102
4.2.1	Pilot study one	106
4.2.2	Pilot study two	116
4.2.3	Pilot study three.....	124
4.2.4	Summary of the pilot studies	130
5	Chapter Five	132
5.1	Study one: a randomised control trial, analysis and results.....	132
5.1.1	Research design and methodology	132
5.1.2	Participants.....	133

5.1.3	Research design.....	146
5.1.4	Procedure.....	148
5.1.5	Results of the music intervention.....	164
5.1.6	The longitudinal effects of the intervention	178
5.1.7	Additional analyses.....	180
5.1.8	Care staff questionnaire.....	209
5.2	Summary of the results.....	214
6	Chapter Six	216
6.1	Study two: a qualitative study, analysis and results.....	216
6.2	Introduction.....	216
6.3	Method	217
6.4	Analysis	218
6.5	Results	219
6.5.1	The experience of old age as lived in a care home	221
6.5.2	The opportunities for listening to music in a care home.....	246
6.5.3	The impact of the music intervention	250
6.5.4	Further investigation	258
6.5.5	Summary	286
7	Chapter Seven.....	287
7.1	Discussion.....	287
7.2	The research questions.....	287
7.2.1	What impact does regular listening to preferred music have on levels of pain, depression and anxiety in older people in long term care?	287

7.2.2	To what extent do the positive effects of music continue after the period of the music intervention?	301
7.2.3	What are the factors that determine the range of individual response to a music intervention?	305
7.3	Additional Findings	312
7.3.1	The duration of the music listening programme	312
7.3.2	The perception of the importance of music.....	314
7.3.3	Age group differences.....	315
7.3.4	The effect of musical genre	317
7.3.5	Clear musical preference.....	318
7.3.6	High anxiety levels.....	319
7.3.7	Strengths and limitations	323
7.3.8	Future research	336
8	Chapter Eight.....	339
8.1	Conclusion.....	339
	BIBLIOGRAPHY	344

List of Figures

Figure 1:1 UK projected population aged 85 and over, 2008, 2023, 2033 (university of Southampton, school of social sciences)	12
Figure 1:2 projected population increases of each age group, the king's fund, no date.....	13
Figure 2:1 Loneliness by age group and sex, 2009-2010. Source: ONS: measuring national well-being 2013	23
Figure 3:1 The gate control theory	45
Figure 4:1 Iowa pain thermometer	90
Figure 4:2 The switching of Groups One and Two.....	100
Figure 5:1 a comparison of median ages in the care homes.....	139
Figure 5:2 The proportion of males and females.....	140
Figure 5:3 The proportions of different ethnic groups.....	141
Figure 5:4 The proportion of those widowed, married, single or divorced	142
Figure 5:5 The range of selected musical genres	145
Figure 5:6 USB memory stick player.....	151
Figure 5:7 Flow chart of procedure	154
Figure 5:8 Total pain scores, intervention one	166
Figure 5:9 Total pain scores, intervention two.....	168
Figure 5:10 Total anxiety scores, intervention one.....	170
Figure 5:11 Total anxiety scores, intervention two	171
Figure 5:12 Total depression scores, intervention one.....	175
Figure 5:13 Total depression scores, intervention two	176
Figure 5:14 Mean scores of group one for complete research period.....	179
Figure 5:15 Total anxiety scores for the complete research period.....	181
Figure 5:16 Total anxiety scores	181
Figure 5:17 'Anxiety' scores for males and females	182
Figure 5:18 'Relaxed' scores for males and females.....	183

Figure 5:19 'Satisfied' scores for males and females	184
Figure 5:20 'Calm' scores for males and females	185
Figure 5:21 'Looking forward' scores for males and females	186
Figure 5:22 Over and under 87s pain scores, group one	189
Figure 5:23 Over and under 87s pain scores, group two	189
Figure 5:24 Over and under 87s anxiety scores, group one.....	190
Figure 5:25 Over and under 87s anxiety scores, group two	191
Figure 5:26 Over and under 87s depression scores, group one	192
Figure 5:27 Over and under 87s depression scores, group two.....	193
Figure 7:1 Scores of group one over the whole research period, copied from Fig. 5:15	302
Figure 7:2 Group one anxiety scores over the complete research period	303
Figure 7:3 Group one depression scores over the complete research period.....	304

List of Tables

Table 4:1 Demographic data of participants in Pilot Study One.	107
Table 4:2 Demographic data of participants in Pilot Study Two	117
Table 4:3 Demographic data of participants in Pilot Study Three.....	124
Table 5:1 Demographic data of each care home	143
Table 5:2 Demographic data of the sample, experimental and control groups.....	149
Table 5:3 Baseline pain scores of Groups One and Two	156
Table 5:4 Baseline anxiety scores of Groups One and Two.....	158
Table 5:5 Baseline depression scores of Groups One and Two	160
Table 5:6 Comparison of mean scores of pain, anxiety and depression	161
Table 5:7 Comparison of subjective health scores.....	163
Table 5:8 Comparison of anxiety levels: with and without sight loss	194
Table 5:9 Comparison of depression levels: with and without hearing loss	195
Table 5:10 Pre- and post-test anxiety scores: expectation of benefit.	198
Table 5:11 Pre- and post-test depression scores: expectation of benefit.....	199
Table 5:12 Comparison of pain assessment scores: participants and care staff.....	209
Table 5:13 Comparison of anxiety assessment scores: participants and care staff	211
Table 5:14 Comparisons of depression assessment scores: participants and care staff.....	212
Table 6:1 Themes from the analysis of the qualitative data	220
Table 6:2 Demographic data of Group A.....	259
Table 6:3 Demographic data of Group B.....	268
Table 6:4 Demographic data of Group C.....	277

List of Appendices

Appendix A	Music Preference Questionnaire.....	378
Appendix B	Demographic Questions.....	384
Appendix C	Questionnaire for the assessment of pain, depression and anxiety.....	386
Appendix D	Final questionnaire on experience of music listening.....	394
Appendix E	Care staff questionnaire.....	396
Appendix F	An example of the thematic analysis.....	398
Appendix G	An example of a music programme.....	402
Appendix H	Participant Consent Form.....	403

Ethical Information

The research for this project was submitted for ethics consideration under the reference EDU 12/030 and approved under the procedures of the University of Roehampton's Ethics Committee on 28.05.2012

1 Chapter One

1.1 Introduction

1.1.1 Background to the research study

In recent years, research into the application of music to various physiological or psychological conditions has been expanding rapidly. However, few studies have explored its use to effect change within the elderly population who are resident in care homes. This is a group of frail, vulnerable people in the final months or years of their lives, whose levels of wellbeing are often compromised by their susceptibility to pain, depression and anxiety. This study examines whether these three conditions, as experienced by the oldest old, are responsive to a music intervention. This is an important subject to explore at a time when life expectancy is increasing and the numbers of those aged 85 and over are growing.

The statistics are startling. In the UK, between 1985 and 2010, the number of people aged 65 and over increased by 20% to 10.3 million, 17% of the total population. By 2035, this figure is projected to rise to 23%. During the same period, the number of those aged 85 and over more than doubled, from nearly 0.7 million to over 1.4 million. By 2035 this figure is projected to reach 3.5 million, or 5% of the total population. It is within this age group that the fastest population increases are occurring. The number of centenarians has also increased. There are currently 13,350, an increase of 73% over the last decade (Age UK, 2015). These projected changes are shown in Figure 1.1 below.

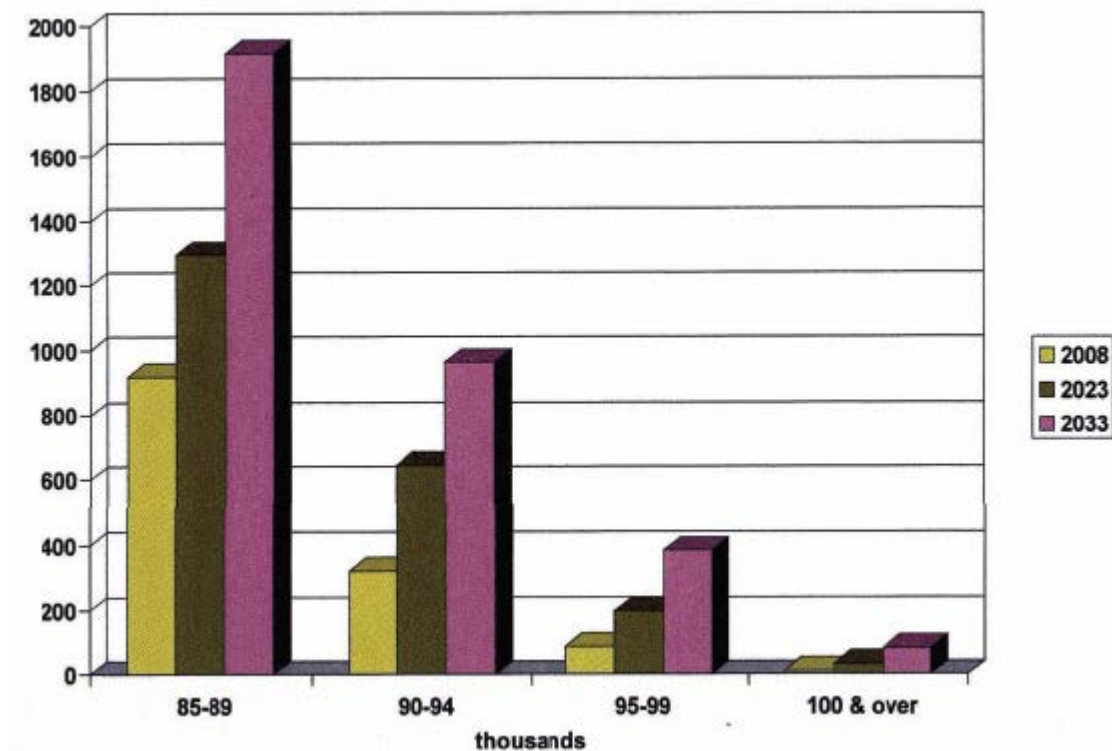


FIGURE 1:1 UK PROJECTED POPULATION AGED 85 AND OVER, 2008, 2023, 2033 (UNIVERSITY OF SOUTHAMPTON, SCHOOL OF SOCIAL SCIENCES)

There are those who question the scale of this trend. For example, Olshansky¹ is one of a growing number of epidemiologists who view obesity (and the concomitant diabetes and vulnerability to strokes) as a fast-developing threat to the life span. Bloom et al. (2008: 29) recognise that predictions may be fallible and state:

Projections on population size and structure can change quite significantly even over short periods. Longevity projections are also precarious and hotly debated. Trends in diet and lifestyle as well as medical and public health advances could combine to raise or lower life expectancy in the future.... trends such as the obesity “epidemic” could reverse life expectancy gains in some countries (Visscher and Seidell, 2001, cited in Bloom et al. 2008).

¹ S. Jay Olshansky is public health scholar at the University of Illinois

Whatever the truth of these views, the statistics demonstrate that, at this particular time and for the foreseeable future, the number of older people, particularly those over 85, is increasing. Figure 1.2, shows the projected percentage increase of each age group and highlights the extraordinary expected change in this demographic.

Age group	Numbers by mid-2012	Numbers by mid-2032	Percentage change	2011 census
0–14	9,332,300	10,399,600	11	9,386,200
15–64	34,697,300	37,182,000	7	34,991,400
65–84	7,812,500	10,896,600	39	7,536,300
85+	1,264,400	2,609,700	106	1,193,300
Overall population	53,106,500	61,087,900	15	53,107,200

FIGURE 1:2 PROJECTED POPULATION INCREASES OF EACH AGE GROUP, THE KING’S FUND², NO DATE

There are different opinions as to whether this increasing longevity is a positive development. Jeremy Laurance³ believes it to be ‘a greater threat to society than war, disease and natural disaster’ and claims that ‘no army, volcanic eruption or yet undreamt of plague can rival ageing in the breadth or depth of its impact on society’ (2002). Other commentators are not so pessimistic. Vaupel and Kistowski (2008) are of the opinion that ‘longer life is not a problem: it is a crowning achievement of modern civilisation,’ a view shared by the Economic and Social Research Council (ESRC), who suggest that it is a triumph of economic and social progress (2013).

Whatever the truth may turn out to be, the growing numbers of older people are already having an effect on society, demonstrated by the pronounced increase in the demands on health and social services. This growth is set to continue with care needs predicted to rise by more than 60% within

² The King’s Fund is an independent charity working to improve health and health care in England

³ Jeremy Laurance is former health editor of The Independent. He was named Specialist Journalist of the Year in 2011.

the next 20 years (Ross, 2010). This presents considerable economic challenges to policy makers as they attempt to meet this growing demand.

Although there is a political drive to offer support at this stage of life in community settings (Department of Health, 2010), rather than in care homes, the need for residential care is expected to increase (Lievesley et al. 2011). At present, there are an estimated 5,153 nursing homes and 12,525 residential homes in the UK (RCN, 2010)⁴, catering for 405,000 older people over the age of 65; of those, 59.2% are 85 and over. They represent 17.63% of the total UK population of over 85s (Poppi, 2013).

The final months or years of life are, for many, characterised by chronic disease and limited function. Higgs and Rees-Jones (2009) use the term “a loss of agency” to describe this period of decline (cited in Lloyd et al. 2012) and it is commonly referred to as the Fourth Age. It is at this juncture of life that the need for support through residential care becomes a necessity for many.

The transition to the Fourth Age can be very challenging (Baltes, 1997) and demands immense ‘physical, mental and emotional effort’ (Lloyd et al., 2012:1). The high value placed on individual autonomy and independence in Western society intensifies the grief felt at their loss (Lloyd et al., 2014). Laslett,⁵ (1991) describes it as a time of ‘dependence and decrepitude’ and Scott-Maxwell⁶ (1979: 988), describing her own fear of approaching old age, writes: ‘We wonder how much older we have to become, and what degree of decay we may have to endure....how many years of vacuity? To what degree of deterioration must I advance?’

This is the demographic that forms the focus of this research study. A wider discussion of the issues and challenges of their lives takes place in Chapter Two.

⁴ According to the Royal College of Nursing, nursing homes are now known as care homes with nursing. Residential homes are now referred to as care homes (2010).

⁵ Laslett, founder of the University of the Third Age

⁶ Scott-Maxwell, F., playwright, author and psychologist. *The Measure of my Days* was written when she was in her 80s.

For those in this situation, the attainment of old age may not feel like the 'crowning achievement of modern civilisation,' as Vaupel and Kistowski (2008) view it. Decline may be inevitable, but there is every reason to seek for ways to improve the wellbeing of those at this stage of life. This aim is recognised in The National Standards for Care Homes, developed by The Care Quality Commission (CQC). It stipulates that the care provided should improve health and wellbeing (CQC, 2010).

Music has a long association with the restoration and maintenance of wellbeing. Its use for the effective relief of a wide range of conditions has been the subject of a growing number of studies in recent years. However, the challenges associated with the research of the oldest old has limited the range of enquiry in this field. Further evidence is needed as to its relevance and effectiveness for this population.

1.1.2 Personal background to the study

My interest in researching this group of people is a personal one. A background in music and an interest in older people led to the establishment of a series of bi-monthly afternoon concerts for older people in central London. The growing audiences and music's obvious impact on them sparked my interest in making this an area of further study. The dissertation for my MA in Music Psychology compared the effectiveness of live and recorded music on the wellbeing of older people in care homes and was the catalyst for undertaking this PhD study. Although many care homes acknowledge that music can benefit their residents, cost generally limits the frequency and quality of live music events, whilst the choice of music presented may not appeal to all residents. I wanted to explore ways of using music that could be achieved at low cost, required no musical expertise to implement and had a wide general application.

There have been a number of studies that have explored the use of music to alleviate pain, depression and anxiety, all common conditions within this population. Although results have been

variable when subjected to rigorous meta-analysis, there is sufficient evidence to suggest that music may be able to provide some relief from each of these disorders. It is hoped that this study will increase the pool of knowledge and encourage music's wider use in this environment.

1.1.3 Outline of the thesis

This thesis is divided into eight chapters. Following this introduction, Chapter Two reviews the literature as it pertains to the challenges of old age and the nature and incidence of chronic pain, depression and anxiety within this population. Chapter Three continues the review of the literature as it relates to the potential benefits of music, the theories that support its use, examples of previous music interventions, findings from research within this field and the challenges that arise from conducting research within this population. Chapter Four discusses the rationale for the methodology chosen and the ethical considerations of research with the oldest old, before describing the three pilot studies, their findings and the subsequent adaptations made. Chapter Five provides a detailed description of the recruited sample and the procedure undertaken before giving a presentation of the results as found by an analysis of the quantitative data. This is followed by a description of the analysis and results of the qualitative data in Chapter Six. Chapter Seven comprises a discussion of the overall findings relating to the three research questions and further related findings. It includes a reflection on the strengths and limitations of the study. Comparisons are made with the findings of previous research studies and suggestions are made for future research. Chapter Eight concludes the thesis with a summary of the findings, its implications and its contribution to knowledge.

2 Chapter Two

2.1 Literature review part one: issues of old age

2.1.1 Introduction

This chapter will address the issues and challenges of old age with particular reference to chronic pain, depression and anxiety, the three conditions of interest in this research study. They will be discussed in some detail with reference to their impact, prevalence, assessment and treatment.

2.1.2 Issues of old age

As referred to in the introduction, opinions differ as to whether increased life expectancy is a positive development for society. Whatever the answer turns out to be, the majority of people endeavour to prolong their lives (Shmotkin, 2011) and hope for a healthy old age. One of the most critical questions for the future is whether these extended lives will be characterised by prolonged periods of good health or whether they will be beset by declining health, increasing disability and dependency (Suzman and Beard, 2011).

Dobriansky et al. (2007) suggest that the prevalence of chronic disease and disability will decrease, resulting in shorter and later periods of illness. However, this is not a universally held view. There are many who believe that the period of ill health at the end of life will lengthen further (Hyer et al. 2011a) due to the rise of chronic illnesses such as heart, brain and respiratory disorders (Suzman et al. 1995; Wanless, 2002) which can lead to long periods of physical and/or mental disability. According to Baltes (1997), this biological decline is inevitable; he believes that humans are not programmed to function optimally in the Fourth Age. For many the process is overwhelming. There are varying estimates of the impact that this will have. For example, Hyer et al. (2011a) suggest that by the age of 85, over 50% will have some disability or degenerative disease and 66%

will have memory complaints; Taylor (2005) suggests that 74% of those over the age of 85 will suffer from some functional decline and disability.

It has been argued that this prolongation of ill health at the end of life is due to the medical profession's focus on the prevention of death, rather than the prevention of disease (Keane, 2008). Brown and Brown (2008) sum up the situation in their observation that 'death is being transformed from a "digital" event – a sudden switching off of a light, due to infectious disease, heart attack or accident – into an "analogue" process that rather resembles the slow elimination of light using a dimmer' (cited in Keane, 2008).

This stage of life, the Fourth Age, has been described as a 'dark and unknowable place' (Gilleard and Higgs, 2010, cited in Lloyd, 2012), 'a miserable slow-motion journey towards degradation and darkness' (Keane, 2008), a form of suffering to be encountered, 'a wound to self-esteem' (Garner and Ardern, 1998: 92) and something to be denied. In the words of Rosow (1962: 187): 'To define oneself as old is the final surrender in life, and age is denied as long as the illusion can be maintained.' It is not surprising to read of a 107 year old who said, 'Everyone wants to live to be old, nobody knows how difficult it is' (Sommer, 2010).

It is a time of loss: 'little by little, you let go of what once you had' (Kenny, 2014). There is the loss of health, with an associated increase in levels of comorbidity, institutionalism and a greater use of health care services (Suzman et al. 1995). There is the loss of status, independence, purpose and usefulness. This was recognised by Joan Bakewell⁷ when she commented that the worst aspect of getting older was 'losing a sense of purpose'. She described it as 'the most awful sense of deprivation' (Harding, 2014). The frustrations experienced by older people from the lack of a useful role in society loss is acknowledged by Age UK (2012). They become 'imprisoned in a roleless role'

⁷ Joan Bakewell is an English journalist, television presenter and Labour party peer. Between 2008 and 2010 she was the Voice of Older People.

(Burgess, 1960). There is also the loss of dignity. As Baltes and Smith (2003: 3) observe, 'Living longer seems to be a major risk factor for human dignity'. Unavoidably, there is the loss of friends.

These multiple losses become increasingly difficult to adjust to (Nicholson et al. 2012) and can have severe effects on quality of life; its optimisation becomes more and more difficult to achieve (Baltes and Mayer, 1999; Smith and Baltes, 1997).

Good levels of health are associated with perceived wellbeing and overall quality of life (Michalos, 2004). It is therefore unsurprising that levels of wellbeing have been shown to decline in the Fourth Age. A number of studies have shown a consistency of life satisfaction across the entire lifecycle until the final years of life when there is a rapid decline among the oldest old (Chen et al. 2001). For example, (Kunzmann et al. 2000) compared the wellbeing of the 'young old' and the 'oldest old' and found that levels of wellbeing declined in the oldest old group only. Bowling (2005) found that on a seven-point Likert scale, 71% of 65-79 year olds indicated that life was either 'so good it could not be better' or 'very good', but that only 32% of those over the age of 80 were of the same view. As Landau and Litwin (2001: 276) said, 'the higher the age, the lower the physical capacity; the less the physical capacity, the poorer the mental health, and this results in lower life satisfaction.' It should also be noted that those in residential care and those with dementia are often excluded from research studies. The reality may be that their levels of wellbeing are even lower.

It is also the case that there are a number of inequalities in the way that people experience old age. Socioeconomic status, gender and ethnicity all have an influence on health status (Victor et al. 2012). Meltzer et al. (2000) go so far as to suggest that overall levels of disability could be reduced if class, gender and ethnic inequalities were removed.

Clearly, this is a challenging period of life with important implications for individuals and society.

In a public lecture in 2008, John Keane⁸ graphically expressed the challenges of ageing in this way:

The feeling of many older people that though they are lucky still to be alive, being old resembles either an unlucky dip or a life sentence in prison after luckily escaping hanging, easily breeds feelings of disappointment and bitterness, along with the dysphoria of loneliness - the broken hearts, the inactivity and consequent physical deterioration of their bodies.

None of the problems that afflict older people are helped by living in a culture where ageism is still tolerated. Matthew Taylor⁹ (2009) stated:

The plight of the most disadvantaged older people does, in part, reflect a general cultural problem with our thinking about old age. Ageism is an issue for us all.

Research of the older population has been inadequate. Cutler (2009) suggests that this is in part due to ageism which is endemic, not only in the general population, but also within the medical profession. Another reason may be the difficulties associated with research amongst this population.

Despite the pessimistic prognosis of Keane (2008) and others regarding the optimisation of a healthy old age, there is growing international interest in the promotion of successful aging. The avoidance of disease and disability, the maintenance of high function, both physiological and cognitive, good social contact and engagement in activities are all areas that need to be addressed (Rowe and Kahn, 1997).

To that end, researchers are investigating the ageing process. For example, Professor Dame Linda Partridge¹⁰, based at the Institute of Healthy Ageing¹¹, focuses on the mechanisms by which

⁸ John Keane is Professor of Politics at the University of Sydney and at the Wissenschaftszentrum, Berlin.

⁹ Matthew Taylor is the Chief Executive of the RSA.

¹⁰ Professor Dame Linda Partridge is Weldon Professor of Biometry at the Department of Genetics, Evolution and Environment of UCL.

¹¹ The Institute of Healthy Ageing is a centre for research on the biology of ageing and ageing-related diseases.

healthy lifespans can be extended in laboratory model organisms. The institute's goal is to improve the health and quality of life for older people (IHA, 2014).

Whether or not the experience of old age changes for the better in the future, no-one would deny that the quality of life is poor for many older people today. There is a need for further research and improved treatments, both medical and therapeutic that can make a difference to their lives. When old people thrive, everyone benefits (Beard¹², 2013) and it is important both for our society and our economy to find ways to achieve that goal.

This study addresses the quality of life and wellbeing of those in long term residential care. This is an identifiable subgroup of older adults who are at risk of lower wellbeing than that of those living in the community (Lawton, 1971). The decline in their wellbeing is commonly associated with higher levels of chronic pain, anxiety and depression, the three conditions examined in this study. They are frequently pre-empted by loneliness. These conditions are now examined in greater detail.

2.1.3 Loneliness in older people

Loneliness is a distressing feature of old age and is directly related to poor levels of health and wellbeing (Cacioppo et al. 2002; Hawkey and Cacioppo, 2003). It has been defined as 'the result of the dissonance between the desired and actual quantity and quality of social relationships' (Victor, 2012). Weiss (1973: 15) describes it in stark terms as 'a gnawing ... chronic disease without redeeming features.'

It is not a new problem. In 1947, a report on old age stated that:

¹² John Beard is Director of Ageing and Life Course Programme at the World Health Organisation.

all who have done welfare work among the old have found it [loneliness] the most common, if at the same time the most imponderable, of the ills from which the aged suffer and its frequency was amply confirmed by our study (Rowntree, 1947).

As well as being a disturbing and upsetting condition for the individual, it has a high cost for society. Pope Francis has described it as 'one of the most serious of the evils that afflict the world' (Scalfari, 2013).

Two factors that are consistently associated with loneliness are the simple fact of being 75 or over and poor health, both physical and mental (de Jong Gierveld, 1998). For example, functional disabilities such as hearing and sight loss place inevitable restrictions on social life (Victor et al. 2005), whilst declining mobility increases the time taken to complete essential tasks, thus leaving less time and energy for more social activities (Victor et al. 2008). Statistics on loneliness from the ONS¹³ (2013) show that those experiencing difficulties with these activities of daily living are lonely for 45% of the time.

Those in their 80s and over report the highest rates of loneliness (Demakakos et al. 2006). Statistics show that 46% of those aged 80 and over are lonely compared to an average of 34% for those aged 52 and over (Beaumont, 2013). As this age group is growing faster than any other in our population one can assume that there will be a considerable increase in the numbers of those suffering from loneliness.

Living alone does not necessarily equate with loneliness, but may exacerbate it. The living conditions of the oldest old have changed dramatically over the last fifty years or so, a reflection of some of the changes in our society. In 1948, a survey showed that 51% of older people lived with their children or grandchildren and that this was the normative pattern (Sheldon, 1948). This figure

¹³ ONS. Office for National Statistics. The Office for National Statistics (ONS) is the UK's largest independent producer of official statistics and is the recognised national statistical institute for the UK. It is responsible for collecting and publishing statistics related to the economy, population and society at national, regional and local levels.

may now be as low as 2% (Bridgwood et al. 2000). The number of over 75s living alone is increasing, with an expected growth of 573,000 over the next five years to 1.4 million (POPPI, 2013). Although many older people choose to live alone, detailed surveys by Bowling (2005) show that whilst 85% of people who live with others are 'never' lonely, only 32% of those who lived alone said the same. Opportunities to socialise dwindle due to declining mobility and general decline, thus increasing the likelihood of being lonely. This is reflected in the findings in Figure 2.1 below which shows a marked increase in loneliness in those over 80, particularly amongst women.

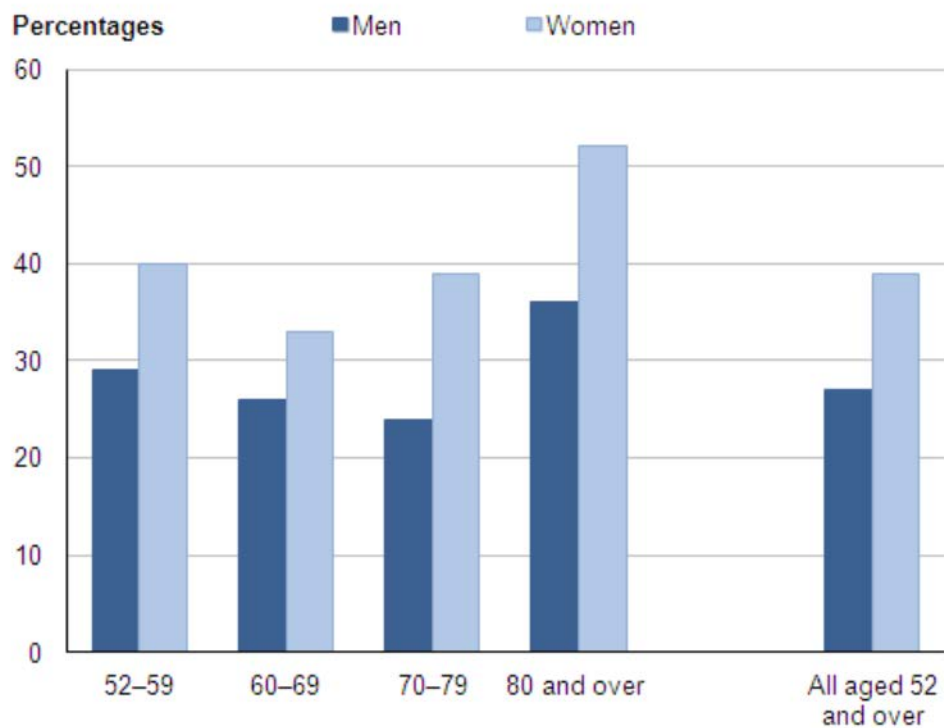


FIGURE 2:1 LONELINESS BY AGE GROUP AND SEX, 2009-2010. SOURCE: ONS: MEASURING NATIONAL WELL-BEING 2013

Besides poor functional health and living alone, another factor associated with the onset of loneliness is poor satisfaction in life. The ONS (2013) shows that those dissatisfied with life experience loneliness for 90% of the time.

Statistics provided by Age UK¹⁴, DVLA¹⁵ and AA¹⁶ highlight other contributory factors: 12% of older people feel trapped in their homes; 36% feel out of touch with the pace of modern life; 12% say they never spend time with their family, and 11% have less than monthly contact with family, friends or neighbours (Age UK, 2015).

Loneliness can be exacerbated by fear. In an interview in *Aging Today*¹⁷, 69-year-old Gabriel Delgado (2012) said:

Fear and isolation go hand in hand, because that is what I feel sometimes. I can't walk as fast or defend myself, my reflexes aren't as quick as they used to be, and I have some medical issues – so I stay home. Sometimes I would like to be out there in the world doing all the things I used to do, but I can't.

Unfortunately, loneliness in older people is often overlooked, with many health services failing to acknowledge it as a condition (Hunter, 2012) despite the serious health problems, both physiological and psychological, that often flow from it. These health issues may be due to the biological reactions to stress that loneliness causes (Dean and Lin, 1977) and a decline in physiological resilience (Hawkley and Cacioppo, 2007).

There are several of these associated health problems. Sorkin et al. (2002) found a correlation between loneliness and high negative affectivity, depression and low positive affectivity. As well as these psychological effects, there are also physiological ones. Evidence has been found for a link

¹⁴ Age UK. the UK's largest charity working with and for older people

¹⁵ DVLA. Driver and Vehicle Licensing Agency

¹⁶ AA. Automobile Association

¹⁷ *Aging Today* is the American Society on Aging's bimonthly newspaper

between isolation and cardiovascular disease, alcoholism (Akerlind and Hörnquist, 1992), impaired immune function (Pressman et al. 2005), elevated blood pressure, impaired sleep (Cacioppo et al. 2002), impaired cognition and double the risk of developing Alzheimer's disease (Wilson et al., 2007). Smith et al. (2002: 727) even suggest that loneliness, amongst other negative emotions, is associated with an increased 'hazard of dying'. Research has shown that its impact on mortality is similar to smoking 15 cigarettes a day (Victor, 2012), and twice as bad for your health as obesity: 14% are more likely to die from loneliness compared to 7% of obese people (Devlin, 2014). In a longitudinal analysis of loneliness in older people, of those who were classed as always or often lonely when assessed at baseline, 35% were dead at follow-up compared with 20% of those in the 'sometimes lonely' group, and 23% in the 'never lonely' group (Victor and Bowling, 2012).

A further reason suggested for these negative outcomes is that people find it harder to regulate behaviour such as drinking, smoking and over-eating, all of which have health consequences (Bolton, 2012; Dean and Lin, 1977).

Clearly, the impact of loneliness is considerable. It is not surprising that it is a significant correlate of entry to care homes (Sinclair et al., 1990). However, the reverse is also true and illustrates the power that social connection, or the lack of it, have on our lives. Strong social networks have been described as being a 'behavioural vaccine', an inoculation against illness (Meltzer, 2013)¹⁸, as well as facilitating a faster recovery time (Harries and de las Casas, 2013). Further effects were found in a 35-year-long Harvard study (Butler, 2010), which showed that a good marriage at the age of 50 is a better predictor of good health at the age of 80 than a low cholesterol count. In addition, a ten-year Australian study by Giles et al. (2005) showed that older people with extensive networks of good friends and confidantes outlived those with the fewest friends by 22%.

¹⁸ Barbara Meltzer serves on the editorial advisory committee of the bi-monthly magazine, *Aging Today*.

Although failure to engage with the problem of loneliness has far-reaching health and economic implications, there are grounds for optimism. Victor and Bowling (2012), in their longitudinal analysis of loneliness among older people, demonstrate that it is possible for older people to 'recover' from loneliness with all the attendant health, social and quality of life benefits.

2.1.4 Depression in older people

Depression has always been a health problem for human beings and there have been countless theories as to its cause and a multitude of alternative treatments. According to the World Health Organisation, depression is projected to become the leading cause of disability and the second leading contributor to the global burden of disease by the year 2020 (WHO¹⁹, 2001).

The symptoms and behaviours associated with depression are distressing. It is defined as a 'common mental disorder that presents with depressed mood, loss of interest or pleasure, feelings of guilt or low self-worth, disturbed sleep or appetite, low energy and poor concentration' (WHO, 2011). However, Hussain et al. (2005) suggest that depression in extreme old age is distinct as it has more 'medical comorbidities, more insomnia, less positive affect and less negative ideation' (cited in Hyer et al. 2011a: 334). Other symptoms identified by Quinlan-Colwell and D'Arcy (2012) are withdrawal from family and friends, increased dependency on others, vague physical complaints and thoughts of death or suicide, whilst Hanser (1990) adds feelings of hopelessness, a sense of failure and dissatisfaction, lack of interest and poor decision making.

Like loneliness, depression is a common disorder in the oldest old population (Koenig et al. 1988) with several studies showing an increase of depressive symptoms as people age. According to Tannock and Katona (1995), there is a steady rise in depression in old age followed by a very steep increase in people aged over 80. It is often chronic or recurrent and is associated with significant

¹⁹ The World Health Organisation (WHO) is a specialised agency of the United Nations (UN) that is concerned with international public health. It was established on 7 April 1948, headquartered in Geneva, Switzerland

suffering, functional impairment and reduced health-related quality of life (Unützer et al. 2002). This is an important public health issue due to the growing economic burden that it represents.

Depression is categorised as severe, mild or sub-threshold. Instances of severe depression are relatively rare but sub-threshold disorders are particularly common in later life (Tannock and Katona, 1995) and would seem to have the same consequences for the wellbeing and functioning of older people as severe depression. It should be regarded as serious and can be a risk factor for the development of a more severe depressive disorder (Ibid).

Estimates of the prevalence of depression vary widely. This is due to the varied methods of assessment (McDougall et al. 2007) and to different definitions of depression (Jongenelis et al. 2003). In a review of the literature Jongenelis et al. (2003) compared the results of 36 studies. They showed that the incidence of depression in care homes ranged from 2% to 61%. The following year, the same researchers carried out a study of their own and found an overall prevalence rate of 46.2%. This was three to four times higher than for those living in the community (Jongenelis et al. 2004). As the researchers were unable to assess those with severe illness or cognitive dysfunction, they suggested that there was a high probability of this figure being an underestimation. However, a more recent review (Mukai and Tampi, 2009) estimated that between 15% and 25% of older people in care homes suffered from depression, compared with 15% of those living independently. A third study showed prevalence levels of 27.1% in care homes compared to 9.3% in the community (McDougall et al. 2007).

Some researchers give separate estimates for the incidence of severe and less severe depression. For example, Quinlan Colwell (2012) estimates that out of an overall total of 42% of those with depression in care homes, 12% of those suffer from severe depression and 30% with less severe. She states that there are some reports that give an estimate as high as 78%.

These widely varying figures make it impossible to make an accurate estimate of the prevalence of depression, but it is widely agreed that depression in this age group is a significant issue with distressing consequences. This includes an increased risk of mortality and a negative effect on both wellbeing and daily functioning (Beekman et al. 2002a, b). In about 50% of cases, it can persist for years (Katona and Livingston, 2000).

A number of risk factors have been suggested for the onset of depressive symptoms amongst older people in care homes. Jongenelis et al. (2004) cite age, pain, visual impairment, stroke, functional limitations, negative life events, loneliness, lack of social support and perceived inadequacy of care. Others have suggested particular personality traits (Kivelä and Pahlala, 1991), being female, low educational attainment (Espinoza and Kaufmann, 2014), psychological reactions to an illness or the side effects of medication (Baldwin and Wild, 2004; Gurland et al. 1988), wishing to be dead and fear of a bleak future (McDougall et al. 2007).

The effects of depression are widespread and distressing. For example, it can accelerate the decline of both cognitive and functional ability. Cognitive function can be affected due to changes in the body chemistry that result in slower thinking and reaction times. Functional ability can be affected by changes in clotting mechanisms and stress hormone levels leading to high blood pressure, the furring of arteries and heart disease (Lenze et al. 2001). The impact from loss of functional ability has been described as being similar to, or worse than a major chronic physical illness (Katona and Livingston, 2000). This is illustrated by statistics for mortality following a hip fracture. When there is no evidence of depression the incidence is 5%; when depression has been diagnosed, the incidence is 29% and when there is depression with dementia the incidence is 80% (Shamash et al. 1992).

There are several other effects: changes to the immune function can increase the risk of diseases such as cancer (Lenze et al. 2001); slower recovery from physical illness can lead to longer hospital stays and a greater likelihood of needing residential care (Manthorpe and Iliffe, 2005); an increased

risk of mortality (Cuijpers and Smit, 2002), suicide (Baldwin and Wild, 2004), poorer self-rated health and greater use of psychotropic medications' (Espinoza and Kaufmann, 2014).

No discussion of depression can be undertaken without reference to chronic pain, one of the conditions investigated in this study, as the two conditions are closely associated (Draper, 2000b). This has been illustrated in a longitudinal aging study carried out in Amsterdam (Geerlings et al. 2002). It found that there was a highly significant correlation, with the percentage of those developing depression more than three times higher in those with initial pain than those without (Ferreira and Sherman, 2007). Arthritis, one of the most common diseases of old age, is often a cause of pain and some degree of functional impairment. The incidence of comorbid arthritis and depression is high and the resulting decline in quality of life is 'the rule rather than the exception' (Lin et al. 2003: 2432).

Not only are the two conditions of pain and depression highly correlated, they are risk factors for the onset of each other (Karp and Reynolds, 2009). For example, when depressed, appetite and sleep may be poor and there may be a lower pain threshold. This can lead to reduced activity, increased disability, a higher risk of developing osteoporosis and therefore an increased incidence of falls that frequently result in hip and other fractures. Apathy, another symptom of depression, can result in less compliance with prescribed treatment, which can worsen existing conditions and slow recovery from procedures such as hip fractures (Lenze et al. 2001).

The reverse is also true. For example, it has been found that when there are a number of pain sites, the depression may be more severe (Magni and Frisconi, 1996; Croft et al., 2005). This is also the case for those who experience more intense, lasting and frequent pain (Fishbain et al. 1997).

There has been much debate as to whether chronic pain or depression is the more likely catalyst of the other. Based on systematic reviews carried out by Fishbain et al. (1997), the overall findings suggest that chronic pain is more likely to lead to depression than vice versa. What is certainly true

is that people who experience both conditions suffer inordinately. The physical, psychological, social and financial costs can be enormous (Campbell et al. 2003) and the prognosis is poor (Geerlings et al. 2002; Karp and Reynolds, 2009).

Many cases of depression in this age cohort are either undiagnosed, misdiagnosed or untreated (Koenig et al. 1992, 1997a; Snowdon et al. 1996). There are a number of reasons for this, one being the common misconception that depression is a normal feature of ageing (Katona, 2000). Another is the commonality of depressive symptoms and normal characteristics of ageing such as fatigue, insomnia and thoughts about dying. In addition, older people with depression show less overt signs of low mood than is usual in younger depressed patients (Katona, 2000); they may present with somatic and anxiety symptoms rather than overt sadness (Katona and Livingston, 2000). A further reason for poor diagnosis may lie in the fact that many people in this population experience pain (Bair et al. 2003). The two conditions can interfere with the effective treatment of each other (Karp and Reynolds, 2009) and response to treatment may be slow (Karp et al., 2005), possibly due to pain slowing the effect of antidepressants.

An example of low diagnosis is found in an epidemiological study which found that only 9.7% of the 103 depressed patients identified had been prescribed medication. Lack of treatment has poor outcomes with increased disability and lower quality of life (Katona et al. 1997).

Treatment of depression raises a number of issues. Compliance with medication may be inadequate due to low mood or feelings of apathy; side effects experienced in the past may deter patients from seeking an alternative (Geerlings et al. 2002); the slower metabolisms of older people may delay a response. For example, rather than a four-week wait for a response to treatment, it may take between six and eight weeks for older people to respond (Baldwin and Wild, 2004). Other factors of old age such as physical illness, cognitive impairment and lack of support from family and friends may also prejudice a successful outcome (Baldwin and Jolley, 1986). This was illustrated in a study carried out by Beekman et al. (2002a) who found that the frailest of their participants had

the poorest of outcomes. In fact the prognosis for all late-life depression was poor, with nearly half the sample suffering from depression more than 60% of the time. Even with successful treatment, Manela et al. (1996) draw attention to the fact that depression in old age is often chronic; there is a high risk of relapse.

Alternative treatments such as psychotherapy are not always recommended. For many, it can be too late to make a change to their attitudes; they are too set in their ways (Katona, 2000). In many places, it is not readily available (Brandes, 2009). There is a need for 'the development of a safe, effective and scalable treatment alternative' (Paykel et al. 2005, cited in Brandes, 2009: 93).

Clearly, depression with its high prevalence and distressing outcomes is a major issue in this population. Alternative treatments and preventative measures are required in order to improve and maintain psychological health.

2.1.5 Chronic pain in older people

'Pain is the most pervasive and universal form of human distress' (Hadjistravropoulos and Craig, 2004) and results in huge costs, both to individuals who are suffering and to the society that carries the economic burden. According to the UK Chief Medical Officer's report of 2008, chronic pain is more commonly reported than 40 years ago (Donaldson, 2008) and is the primary reason for medical consultations (Turk and Dworkin, 2004, cited in Mitchell and MacDonald, 2012). It is subjective, 'a private percept that arises in a conscious brain, typically in response to a noxious provoking stimulus, but sometimes in the absence of a stimulus' (Devor, no date) and is one of the many afflictions of old age.

This is a time in life when both the pathological load and the number of painful conditions increase (Ferrell et al. 1990). It is for this reason that many older people regard the experience of pain as being the norm rather than the exception (Karp and Reynolds, 2009; O'Neill and Morrison, 2011)

and as a natural part of the ageing process (Herr and Garand, 2001). As well as the distress caused to individuals, it has profound consequences for society.

Chronic (rather than acute) pain is defined as pain that persists for more than 12 weeks or beyond the normal duration of injury or tissue damage (McCaffrey and Freeman, 2003). It may not indicate what is actually occurring in the tissues (Moseley, 2003) and can continue indefinitely (Stevenson, 1995). It has been suggested that this is due to an inability of the body to restore its physiological functions to normal homeostatic levels (Loeser and Melzack, 1999). It may also be that the mechanisms that dull pain sensation stop working and a range of factors combine to exacerbate the symptoms (Donaldson²⁰, 2008: 37). Melzack (2005) considers it to be a disease in itself.

Various factors contribute to the experience of chronic pain and they are not just physical. They include neurological and physiological states, beliefs and coping skills, emotional states and social interactions (Gold and Clare, 2013). The very issues that contribute towards it are also affected by it. No dimension of life is excluded: the physical, the psychological and the social (Gudmannsdottir and Halldorsdottir, 2009). It is said to reduce the quality of life more than almost any other condition (Donaldson, 2008: 35).

The physiological effects are profound. They may include immobility and the ensuing wasting of muscles, weakening of the immune system, insomnia (resulting in a decrease in pain tolerance and threshold), poor appetite (EFIC²¹, no date), lack of energy to fight symptoms and adhere to treatment (Mitchell and Macdonald, 2009), an increased use of analgesics (Asmundson and Wright, 2004), plus increased morbidity and mortality (Gagliese, 2009; Quinlan-Colwell and d'Arcy, 2012; Karp and Reynolds, 2009).

²⁰ Chief Medical Officer Annual Report

²¹ European Pain Federation

There are also a number of upsetting psychological effects: the reduction of cortical processing capacity, the slowing of decision making, forgetfulness and distraction (Moseley, 2003). There is also fear: fear of what the future will hold; fear of medical complications or an unfamiliar environment such as a hospital or residential home (Prensner et al. 2001); of continuing ill health and increased disability (Lin et al. 2003); of greater financial costs. These fears have consequences. The fear of further deterioration can lead to depression, anxiety (Karp and Reynolds, 2009), sadness (Donald and Foy, 2004), powerlessness (Turner et al. 2004), and the loss of independence and autonomy (Ferrell, 1991).

The social effects are also distressing. The understandable withdrawal from families, social networks and activities often lead to isolation and loneliness (Sofaer et al. 2005; Chibnall and Tait, 1994).

These effects - physiological, psychological and social - explain the strong association of chronic pain with depression, anxiety and isolation (Crombez et al., 1999b). As well as being a cause of low mood states, chronic pain is itself exacerbated by them (Turk and Okifuji, 2002). For the oldest old, these conditions constitute a heavy burden.

Melzack (1990) puts it starkly:

prolonged pain destroys the quality of life. It can erode the will to live, at times driving people to suicide. Severe, persistent pain can impair sleep and appetite, thereby producing fatigue and reducing the availability of nutrients to organs. It may thus impede recovery from illness or injury and, in weakened or elderly patients, may make the difference between life and death.

There is growing awareness of the particular characteristics of pain experienced by the oldest old. They experience prolonged recovery from injury, more sensitivity to pain and less ability to tolerate it (Quinlan-Colwell and d'Arcy, 2012). Because of this, the last two decades have seen the emergence of a new discipline, that of geriatric pain management. Health professionals have

realised that it is not possible to generalise findings from a younger population; different assessment and management strategies are needed (Gagliese, 2009).

Chronic pain is considered as being one of the most expensive health problems of both American and European society (Bertirotti and Cobiانchi, 2008). Prevalence is difficult to assess and statistics vary. For older people, pain is, perhaps, the most demanding problem of their daily lives (Jakobsson and Hallberg, 2002) and, for a significant majority, interferes with their normal functioning (Gagliese and Melzack, 1997). Many studies report a prevalence range from 45% to 80%, depending on age and environment (Ferrell et al. 1990; Roy and Thomas, 1986). According to Herr and Garand (2001), for those over 60 the incidence of pain is twice as high as for those under 60. A survey, carried out in inner London, of 662 people aged 85 and over (Bowling and Browne, 1991) found that 70% reported aches, pains and stiffness. For those in a care home environment, the numbers are even higher. Some sources suggest that the incidence of pain could be 80% or more (Ferrell, 1995; Helme and Gibson, 2001; Herr and Garand, 2001). However, this is not always diagnosed. According to Gagliese (2009), only between 16% and 27% of care home residents receive treatment.

Numerous conditions amongst this population cause chronic pain. They include arthritis, foot or leg pain, osteoarthritis, rheumatoid arthritis, neuralgia, spinal canal stenosis, cancer, fibromyalgia, osteoporosis with crush fractures, asthma, bronchitis/emphysema, gout, headache and post-stroke pain (d'Arcy, 2009). These can be worsened by declining physiological reserves and general frailty, falls, skin breakdown and weight gain (Quinlan-Colwell and d'Arcy, 2012).

The assessment and treatment of chronic pain is not straightforward and can be more challenging in older people. In many situations, insufficient attention is paid to it (Herr and Garand 2001) and it is, therefore, often left unrecognised or inadequately treated. As it is a subjective experience, assessment can only be carried out via self-report of its intensity, duration (Gudmannsdottir and Halldorsdottir, 2009) and behavioural responses (Nayak et al. 2000). This may be difficult to

interpret in cases of cognitive impairment (Stolee, 2005), which itself can alter the ability to recognise pain (Buffum et al. 2007).

The difficulty of pain assessment of those with cognitive impairment was illustrated by a study of 551 care home residents. Of the cognitively intact cohort, 80% received pain treatment; of those with cognitive impairment, only 56% received treatment. This difference in treatment was not due to differences in pain-related conditions; they were spread equally between the two groups (Reynolds et al. 2008). Another study of care home residents found that 79% of the cognitively impaired population had a painful condition such as arthritis or a hip fracture, but fewer than 40% received analgesics (Feldt et al. 1998).

There are a number of assessment issues specific to treating older people. For example, hearing loss can impede the accurate completion of pain assessment measures (Gagliese, 2009). Reduced cognitive function may lead to inconsistencies in the reporting of pain, which can result in it being discounted by clinical staff. There are other possible impediments to assessment such as an absence of tissue damage or any pathophysiological cause. In these situations, the pain is usually due to psychological reasons (EFIC²², no date).

Other issues are specific to the attitude or behaviour of the individual. For example, some may attribute pain to the ageing process (Maxwell et al. 2008) and be unaware of possible pain relief; others tire of asking (Herr and Garand, 2001) or fear being labelled as a 'bad patient' (Yates et al. 1995). They may just think that there is little that can be done (Melzack, 2012). A large number of those in residential care are reluctant to report pain either because they do not want to be a nuisance or because they fear the consequences of admitting to it. These consequences could include intrusive diagnostic tests, medications with unpleasant side effects, additional expense and further loss of independence or autonomy. It could also indicate severe illness and a poor prognosis

²² EFIC: European Pain Federation

(Herr and Garand, 2001) or a desire to appear to be functioning well (Morley et al., 2000). As one participant said, 'I'm not going to let them know the amount of pain I am in or how distressed I am about it' (Sofaer et al. 2005). To add to the problems of diagnosis, pain behaviour may be difficult to understand. For example, some older people may withdraw and/or spend more time in bed (Weiner et al., 1999) and may demonstrate confusion or apathy (Herr and Garand, 2001). They may also report atypical pain due to interacting comorbidities (Gibson and Helme, 2001).

The symptoms of pain and depression are often similar and it can be difficult to differentiate between the two conditions (Herr and Mobily, 1991). In fact, older people may use pain complaints to explain symptoms of depression (Kwentus et al. 1985). For example, triggers for depression such as bereavement can exacerbate how the pain is experienced. In turn, the pain may affect the way in which the individual is able to cope with bereavement (Quinlan-Colwell and d'Arcy, 2012).

Reference has already been made on page 19 of this chapter to the effect of gender and ethnicity on health status. These variables may also affect the assessment of pain. Although the response to pain may differ significantly among individuals, people from the same cultural or ethnic group often show similar reactions (Davidhizar and Giger, 2004). Different cultures perceive, express and tolerate pain in different ways (Rollman, 1998). This may be due to a range of biological, social and psychological mechanisms (Edwards, et al. 2001). Areas of difference include pain threshold, the physiological response to pain medication and the verbal expression of pain (Giger and Davidhizar, 1999).

Different societies have differing expectations of what behaviours are acceptable, and this is true of the way that individuals respond to pain. Different cultures may encourage either avoidance or acceptance of pain (Davidhizar and Giger, 2004). For example, a comparison was made of the different pain responses made by participants from India and America. Results showed that the Indian participants displayed a higher tolerance of pain and more restraint in expressing their responses (Nayak et al. 2000). For them an overt expression of pain was less acceptable. An

earlier study by Opler (1961) found that the Irish were more stoical than the Italians in their attitude to pain.

Another example was found by Beecher (1946) when he compared the number of requests made for pain relief by 150 participants with similar injuries; half were male civilians and half were wartime casualties. Eighty percent of the civilians requested pain relief compared to thirty two percent of the soldiers, less than a quarter of whom claimed not to perceive any pain. Reasons for this difference were not clear, but may have been due to the cultural expectations amongst the soldiers.

Some researchers have suggested reasons for the different cultural responses. Opler (1961) observed that Italians showed 'an excessive' response to pain and suggested that this was due to a preoccupation with bodily function and body image. By contrast, he observed that the Irish were more stoical in their response; he suggested that this was due to the pride they took in disregarding the physical self.

Differences have also been shown in treatment preferences between cultural groups (McCaffery and Pasero, 1999). Some are more stoical and hesitant in seeking pain relief; they may feel that to acknowledge pain is a weakness. Others may be more emotive and demanding of treatment (Davidhizar and Giger, 2004). Religious groups may also have different responses to pain. For example, they may believe that pain is a punishment or that suffering is to be endured in order to enter heaven (Juarez et al.1998).

As well as differences in pain report and treatment preference, there are also ethnic differences in biological reactions to medication (Davidhizar and Giger, 2004). For example, in a study that compared the reactions of Chinese, Hawaiian and Whites to pain medication, it was found that the Chinese required lower dosages (Preble et al. 1992). This has important implications for prescribing the correct dosage as well as observing potential side effects (Kee and Salerno, 1995).

It is important to be aware of all these differences in order to assist the accurate assessment of pain. As well as differences between cultures, a difference between genders has also been observed. The literature shows a trend towards women having a lower pain threshold and therefore experiencing higher pain intensity than men (Nevin, 1996). In a review of the gender and pain literature, Unruh (1996) identified some of the reasons for these differences in pain experience between the genders. She compared the experience of childhood, when boys are expected to show stoicism and minimise their report of pain intensity, whilst girls do not have the same expectations made of them, and are more likely to respond to pain with tears or screams. She posited that the effect of these cultural or social expectations for boys may continue to be fostered within predominantly male institutions such as the armed forces.

Similar conclusions of childhood responses were made in an observational study of children, carried out by Fearon et al. (1996). They reported that in a situation where there were no differences in the severity of pain-causing incidents, females expressed more intense distress than males and also received more comfort and attention. It was suggested that these behaviours might be a catalyst for the development of a more 'catastrophic' orientation to pain. The authors concluded that it was important to recognise possible differences between genders in their response to pain, and resulting pain behaviour. There has been a consistency in the findings from both clinics and laboratories that men demonstrate greater tolerance to pain than women (Nayak et al. 2000).

As well as the issues surrounding accurate assessment, the treatment of pain also raises a number of questions. When prescribed, administered and monitored appropriately, analgesic drugs can be an effective treatment for pain (Helme, 2001). However, this is not always the case. Chronic pain can be unresponsive to medication (Jamison et al. 2011) and Groen (2007) observes that the lack of response may be due to psychological issues not being properly addressed. Besides this, older people are increasingly vulnerable to side effects from analgesic drugs as well as adverse drug interactions (Maxwell et al. 2008), which may occur at much lower doses in advanced old age (Quinlan-Colwell and D'Arcy 2012). There is also the increased risk of falling and the subsequent

effect on mobility and balance (Hanlon et al. 2009). Their use, therefore, poses more risks in this population (Barber and Gibson, 2009). Peck (2002) rightly describes pain medication as being a double-edged sword; as well as being of potential benefit to the patient, there is a risk of dangerous side effects.

Improved recognition, assessment and management of pain could lead to substantial improvements in the quality of life of older people as well as reductions in the socioeconomic burden of pain-related conditions and disabilities (Maxwell et al. 2008). Although there are no treatments that totally eliminate it (Turk et al. 2004) it should be possible to provide some relief to the suffering experienced (Jakobsson and Hallberg, 2002). Morosko and Simmons (1966) observe that the elimination of a source of fear or anxiety could reduce the overall perception of pain. This is one strategy. As Melzack (2012: ix) has commented, 'Patients with chronic pain need every possible therapy to battle the pain'.

2.1.6 Anxiety in older people

The American Psychological Association (APA) defines anxiety as an 'emotion characterised by feelings of tension, worried thoughts about what will or might occur and physical changes such as increased blood pressure' (APA, 2013). Symptoms may also include feelings of nervousness, the inability to relax, trembling, pacing, fidgeting, memory loss, changes in sleep patterns, sweating, dizziness, headaches, hot or cold spells and difficulty concentrating (Quinlan-Colwell and d'Arcy, 2012).

Although more attention has been paid to the incidence of depression in this population, there is a growing amount of literature on the prevalence of anxiety together with an increasing awareness of the impact that anxiety has on those in later life (Small, 1996). It has been suggested that its adverse impact on quality of life and the consequential use of health care resources has as great an impact on the lives of older people as major depression (de Beurs et al. 1999). Despite this, anxiety

is under-recognised and under-treated (Bryant et al., 2008). It is highly prevalent in clinical settings where it has been suggested that up to 44% of older people experience symptoms (Ames et al. 1994a, b). It is associated with considerable distress and morbidity (Bryant et al. 2008).

The symptoms differ from those of depression, but the risk factors for its onset are not dissimilar for this population: lack of social support, traumatic events, fear of worsening pain, disability and opioid dependence all trigger symptoms of anxiety (Karp and Reynolds, 2009). Other risks include being female, having high levels of neuroticism and hearing or sight loss (de Beurs et al. 2000).

Anxiety affects the individual both physiologically and psychologically. Functional status may be restricted due to dizziness or feeling shaky; this may limit mobility and the performance of other daily activities. This correlation was demonstrated in a study that found that those suffering from anxiety were between 28% and 67% more likely to have greater levels of disability than those without (Brenes et al. 2005). Lack of mobility may also be caused by fear of taking part in some activities. As with depression, anxiety may slow the immune response and increase susceptibility to diseases such as hypertension and heart disease (Brenes et al. 2005; van Hout et al. 2004). It also increases the risk of suicide (Allgulander and Lavori, 1993).

The difference to quality of life and the impact on public health that could result from greater awareness and treatment is considerable (Kennedy et al. 2001; Smit et al. 2007). For example, the treatment of anxiety could reduce the need for residential care (Diefenbach, 2009) and lower the incidence of pain. As Voss et al. (2004) state, 'if patient anxiety and distress is reduced, then pain is also reduced.'

There is a strong association between anxiety, depression and pain in this population. Parmelee et al. (1994) suggested that anxiety and depression were difficult to distinguish in a frail, elderly population. Because of this association between depression and anxiety among older adults it is suggested that anxiety is also strongly associated with pain (Herr and Garand, 2001) and may even

exacerbate it (Casten et al. 1995; Gagliese and Melzack, 1997), thus reducing the chances of recovery (Guzzetta, 1989). As with depression, older people with higher anxiety levels report more pain complaints and pain of greater intensity than those with lower levels of anxiety (Parmelee et al. 1991). There are various explanations for the comorbidity of pain and anxiety. Those with anxiety may experience more tension and muscle tightening which can itself be a source of pain and may, in turn, lead to further anxiety (Merskey, 1980). Anxiety may also cause a lower tolerance to pain (Gross and Collins, 1981) and a greater likelihood of making pain complaints (Craig, 1989).

It is apparent from the literature reviewed, that these three conditions - chronic pain, depression and anxiety - are highly prevalent, distressing, correlated conditions and share several overlapping symptoms. Their assessment and treatment are in many cases inadequate (Herr and Garand, 2001). Further treatments and therapies would help to improve the quality of life of this population.

2.2 The care home population

Whilst radical improvements to the experience of old age are for the future, the needs of the present are urgent. The most frail and needy of the oldest old population are those living in care homes.

The care home population is in a period of change. In the 1970s and 80s it was not uncommon for older people to opt for residential care in order to benefit from the social and communal advantages that it offered. Today, the picture is rather different. Care homes are moving away from being an alternative form of housing for frail older people towards a location of last resort for individuals with high support needs at the end of their lives. On entry, residents therefore have higher levels of dependency and complex care needs than in the past (RCN, 2010). This postponement of entry to a care home is the reason for the lack of growth in the population over the last ten years. Despite an 11% rise in the number of people aged 65 or over, the number of care home residents is almost unchanged (Donnelly, 2014).

Despite this, it is predicted that over the next six years, the numbers of the care home population will rise. This is due to the rising numbers of older people and the higher incidence of dementia. In 2012, the total number was 330,380. By 2020, it is predicted that this will increase to 411,238. Of the over 85s, the existing care home population will rise from 178,114 in 2012 to 231,122 in 2020. (POPPI²³, 2013).

Bupa is the second largest provider of care homes in the UK with 305 homes and a market share of 6.2%. Their 2011 census provides valuable information regarding the care home population, its constituency and current trends (Lievesley et al., 2011). It is likely that their information can be generalised amongst the entire care home population of the UK.

Three-quarters of the care home population need nursing care rather than residential care. Of those, 90% have 'high support' needs, just under 70% experience some form of incontinence, and nearly half have severe mobility problems. 75% have some form of neurological or mental disorder such as dementia, stroke, depression, epilepsy and Parkinson's disease. Those over 95 tend to have better health; less incidence of incontinence and lower levels of dementia, stroke, depression, diabetes and lung or chest disease. It is thought that this is due to their admission to the care home as a result of frailty, rather than illness. The average age of the female population is 86; that of the male population is 81. Lengths of stay are declining and, if present trends continue, by 2015 the median length of stay for those with dementia will be just over one year, and for frail elderly, a little under nine months.

Given this profile, it is not surprising that only 5% of older people would choose to live in long-term care (Wanless, 2006). However, for most there is no choice. The majority of care home admissions are unplanned and often occur after a hospital admission or other crisis (Victor, 2012).

²³ Projecting Older People Population Information System

This is the population that forms the focus of this study. It is characterised by high levels of disability (Victor, 2005), poor physical and/or mental health, with a significant number experiencing chronic pain, depression and anxiety. In comparison with those that live independently, care home residents report higher distress and lower life satisfaction (Gueldner et al. 2001). It is clearly very desirable that the wellbeing of this population improves. Some alleviation of the levels of chronic pain, depression and anxiety would do much to achieve this.

The review of the literature relevant to the research study is continued in Chapter Three and addresses the potential benefits of music when used as a therapeutic intervention, theories to support its use, results of research carried out so far and the methodological challenges associated with research with older people.

3 Chapter Three

3.1 Literature review part two: the therapeutic use of music

Following the discussion of the issues relevant to old age with particular reference to pain, depression and anxiety that were discussed in Chapter Two, this chapter addresses the theories underpinning the research, the potential benefits of music as a therapeutic intervention, the most effective ways of delivering music, examples of previous music interventions and the challenges of research amongst this population.

3.1.1 Theories for the relief of pain and the improvement of wellbeing

The theoretical basis for the use of music to reduce pain, depression and anxiety is currently provided by two theories: the gate control theory of Melzack and Wall (1965) provides a rationale for the reduction of pain, and Fredrickson's (2004) broaden-and-build theory of positive emotions provides a rationale for the reduction of depression and anxiety.

3.1.1.1 The gate control theory of pain

The gate control theory, proposed by Melzack and Wall in 1965, has been the most influential theory of pain to date (Craig, 2004) and is still considered to be the most valid way of explaining the nature of pain (Bertirotti, 2008). Prior to this, pain had been regarded as a solely sensory experience and as proportional to the peripheral injury or the pathology (Melzack, 1999). Melzack and Wall suggested that there are other factors that contribute to its perception: cognitive, emotional, environmental and behavioural factors (Craig 2004), all of which affect the brain's interpretation of painful sensations (Akombo, 2006). For the first time, psychological factors were regarded as an integral part of pain processing.

Their theory proposed that a gating mechanism in the dorsal horn of the spinal cord could open and close, either to block pain signals or to allow them to continue on to the brain. The mechanism is influenced by the degree or type of activity in the spinal cord; activity in the large neural fibres tends to inhibit transmission and close the gate (analgesic medication, counter stimulation, relaxation, a lack of depressive symptoms or distraction) whereas activity in the small fibres (injury, tissue damage, fear, tension, anxiety, depression, boredom or focusing on the pain) tends to facilitate transmission and open the gate (Asmundson and Wright, 2004: 40). In other words:

The summation of information travelling along the different types of ascending fibres from the periphery with that travelling on descending fibres from the brain determines whether the gate is open or closed and, as such, influences the perception of pain (Asmundson and Wright, 2004).

The mechanism of the pain gate is illustrated in the diagram provided by Melzack and Wall (1965) below.

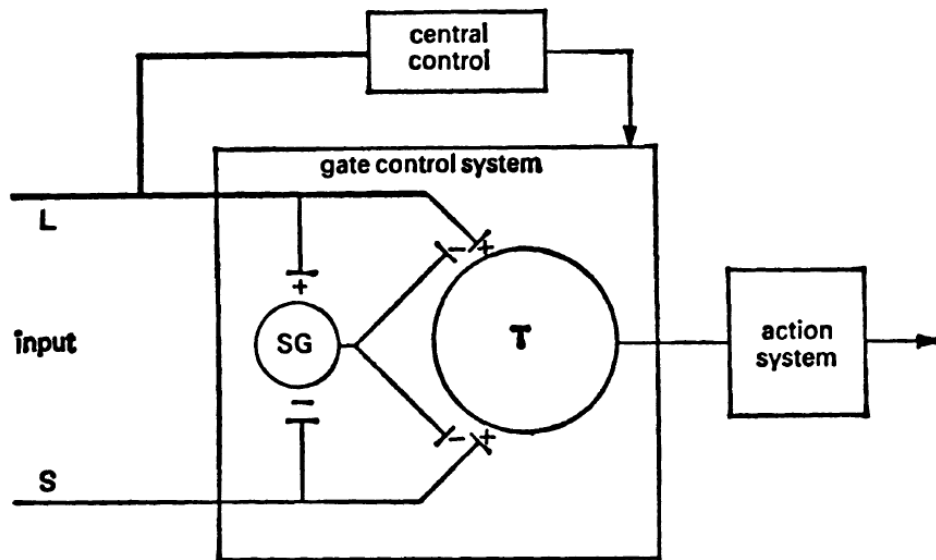


Figure 3:1 'Pain Mechanisms: a new theory' by Melzack and Wall, 1965. L = the large-diameter fibres; S = the small-diameter fibres. The fibres project to the Substantia Gelatinosa (SG) and first central transmission cells (T). The inhibitory effect exerted by SG on the afferent fibre terminals is increased by activity in L fibres and decreased by activity in S fibres. The central control trigger is represented by a line running from the large-fibre system to the central control mechanisms which in turn, project back to the gate control system. The T cells project to the entry cells of the action system.

This theory therefore suggests that, if a strong enough distraction is provided, the cognitive resources available for the perception of pain are more limited (Shiffrin, 1988). When there is a strong emotional engagement with the stimulus, the distracting effect is stronger (Robinson and Riley, 1998). It is unlikely, except in cases of mild pain, that distraction can cause pain to disappear, but it can make it more bearable by replacing it with another focus of attention (McCaffery, 1990).

Although the gate control theory was a breakthrough in the understanding of pain and has been widely accepted since the 1970s, it left some unanswered questions, particularly in relation to chronic pain, a condition characterised by little or no discernible injury or pathology (Melzack, 1999). In 1999, Melzack and Wall presented an updated theory, the neuromatrix theory. This posited that each individual has a genetically built-in network of neurons called the body-self neuromatrix. Just as each person is unique in physical appearance, each person's matrix of neurons is unique and is determined by a number of influences (Melzack, 2005), including the physical and psychological make-up and experience of each individual. Each has their own neurosignature and reacts to pain differently. This understanding that pain signals are unique to each person helps towards a greater understanding of the heterogeneity of chronic pain (Finlay, 2014). Most relevant to this research is the possible improvement to pain perception through both existing methods of treatment (analgesia) and also through alternative interventions aimed at the improvement of mood and increased relaxation in ways suitable for this population.

3.1.1.2 The broaden-and-build theory of positive emotions

Fredrickson describes emotions as 'short-lived experiences that produce coordinated changes in people's thoughts, actions and physiological responses' (Fredrickson and Branigan, 2005). They can be positive, such as joy or contentment, or negative, such as fear or anxiety. Positive emotions are important to an individual's wellbeing and can be regarded as a marker of optimal wellbeing and functioning. They protect against poor health outcomes (Fredrickson, 2003). Negative emotions, on

the other hand, are strongly correlated with poor health and a higher perception of pain. For example, more viruses and asthma symptoms are reported in those reporting negative affect (Smith and Nicholson, 2001); angina and tension headaches can be exacerbated (Chapman, 2004).

There are several examples from the literature on the health benefits of positive emotions. In a large sample of older people, it was found that high positive affect was significantly associated with a reduced risk of strokes over a six-year period and myocardial infarction over a four-year period (Ostir et al. 2001). A further example was found in research on older Mexicans; those with high positive affect demonstrated a significantly lowered risk of disability, loss of mobility and mortality over a two-year period (Ostir et al. 2000).

The broaden-and-build theory of positive emotions, put forward by Fredrickson (2004), develops the putative role of positive emotions further. She argues that as well as positive emotions being a *sign* of optimal function, they can also *produce* optimal function. This is not solely in the moment of the positive emotion being experienced, but over the long term too. Indeed, she suggests that the effects of positive emotions accumulate over time. Individuals can be more or less permanently changed for the better; they can become more healthy and resilient.

This transforming effect has its basis in the theory that positive emotions broaden people's usual ways of thinking or acting. They enable people to see the bigger picture; a broader pattern of thought and increased wellbeing. By contrast, negative emotions narrow people's attention; they 'miss the forest for the trees' and fall into a downward spiral of depressed mood with its narrowed, pessimistic way of thinking.

According to Fredrickson, this notion implies that positive emotions may 'undo' the after-effects of negative emotions and loosen their hold on an individual's mind and body. For example, negative emotions result in an increase of cardiovascular activity which redistributes blood flow to the muscles. She suggests that positive emotions speed recovery or 'undo' the activity and the body is

able to return to its normal levels. In other words, positive emotions accelerate cardiovascular recovery.

Others have made similar claims. Folkman and Moskowitz (2000) suggested that positive emotions experienced during chronic stress can help people to cope better. This has particular resonance for the population in this research. Many older people experience chronic stress from the difficulties of daily living. The experience of positive emotions may have a considerable impact on their capacity for managing their daily lives and their experience of depression and anxiety.

There have also been cases of enhanced recovery after surgery (Ostir et al. 2004). Hip-fracture patients with high levels of positive affect were three times more likely than depressed patients to achieve independence in walking and nine times more likely to return to previous levels of physical functioning (Mossey et al. 1989).

Fredrickson (2004: 1367) therefore suggests that the cultivation of positive emotions is important not only for the momentary experience but also as a means of 'achieving psychological growth and improved psychological and physical wellbeing over time'.

Personal resources accrued during times of feeling positive emotions are durable. They outlast the transient emotional states that led to their acquisition. Fredrickson therefore suggests that the experiencing of a positive emotion leads to an increase in personal resources (physical, social, intellectual and psychological), which can subsequently be drawn on (Fredrickson and Branigan, 2005).

Most relevant to this research study is the potential for lessening depression and anxiety, two conditions that are experienced by many members of the care home population as discussed in Chapter Two. An intervention that induces regular positive emotions may be able to engender the upward spiral of thought that Fredrickson describes and contribute to increased wellbeing.

Although it has been suggested by Pinquart (2001) that the cultivation of positive emotions becomes increasingly difficult in old age due to the accumulated losses of autonomy and competence, it is hoped that some improvements can be made through specifically designed interventions that take into account the potentially negative factors bearing on this population. The research of Ostir et al. (2001), already referred to, demonstrates the effect that positive affect can have on older people.

Fredrickson (2004) concludes:

People should cultivate positive emotions in their own lives and in the lives of those around them, not just because doing so makes them feel good in the moment, but also because doing so transforms people for the better and sets them on paths toward flourishing and healthy longevity. (Fredrickson, 2004: 1375).

Her reference to longevity is an added encouragement that there are possibilities for the experience of positive affect to occur amongst the oldest old with the hope of beneficial outcomes.

These two theories, the gate control theory of pain and the broaden-and-build theory of positive emotions both recognise the important role that emotions play in the relief of pain, depression and anxiety and in the improvement of general wellbeing. The former recommends distraction as a means of relieving the perception of pain, with an emotional component to the distraction giving a better result; the latter recommends the cultivation of positive emotions for improved psychological and physiological wellbeing.

3.1.2 The therapeutic use of music

Over the last few years, research has become increasingly focused on understanding the efficacy of non-pharmacological treatments (Goodall and Etters, 2005). While it is true that there are a number of suitable interventions which may act as distractors for the relief of pain or as a

mechanism to raise emotional levels, the choice of suitable interventions in the care home population is somewhat restricted due to the health limitations of the majority of their residents. One intervention that has been used for thousands of years and that has particular advantages for older people as it is neither physically or cognitively demanding is music (Laukka, 2007). Like pain, it provides a multidimensional experience, and it has been found to have a wide range of beneficial effects (Gold and Clare, 2013).

These two theories (the gate control theory of pain and the broaden-and-build theory) provide a basis for the application of music as a suitable and effective therapeutic intervention. As Maslar (1986) observes, 'Melzack's gate control theory substantiates using music as a distraction away from the pain stimulus, and gives a foundation on which research can be based'. The broaden-and-build theory also supports the use of music as a means of cultivating positive emotions. Fredrickson herself regards it as being particularly suitable for the prevention and treatment of negative emotions (2000).

Both these theories advocate the use of emotionally engaging stimuli. As music is regarded as being 'among the most powerful triggers of emotions' (Rickard, 2004: 371), it is considered to be a suitable tool to employ. Its ability to arouse positive emotions is now well accepted in the psychology of music literature (Hargreaves and North, 1997; Sloboda, 1985). It also has the capacity to minimise negative affect (Miranda and Claes, 2009) and to enable mood regulation (Västfjäll, 2002). It has been described as 'self-administered emotional therapy' (Else and Sloboda, 2003: 42).

This emotional arousal is evidenced both by subjective reports – the modifying of emotions is reported as the top reason for choosing to listen to music (Panksepp, 1995; Gabrielsson, 2001) – and by objective measures of physiological changes in the body (Rickard, 2004; Sloboda et al. 2001) such as changes to heart and respiration rate and the lowering of cortisol levels (Fancourt et al. 2014).

3.1.2.1 Music's therapeutic properties

Listening to music is widely regarded as one of the most rewarding of experiences (Salimpoor et al. 2009) and is consistently ranked in the top ten things that people enjoy (Dube and Le Bel, 2003). It can be much more than a passive way to pass the time. Professionals from a range of different medical backgrounds have judged it to be a useful therapeutic tool. For example, the psychiatrist Storr²⁴(1997: 4) puts it eloquently: 'music can penetrate the core of our physical being. It can make us weep, or give us intense pleasure. Music, like being in love, can temporarily transform our whole existence.'

And in a frequently cited qualitative study on older people's use of music, Hays and Minichiello (2005: 437) found that 'it provides ways for people to maintain positive self-esteem, feel competent, independent and avoid feelings of isolation or loneliness'. In fact, listening to music can help us in every domain: 'socially, emotionally, physically and neurologically' (Magee, 2011).

Because of its immediate availability, music's benefits can be realised conveniently (Lingham and Theorell, 2009). Most importantly, it can be utilised for almost all patients, whatever their physical or mental condition, and can be enjoyed until the end of life. It is thought that this is due to the fact that the ability to process music is retained by a part of the brain that is the last to deteriorate (Crystal et al. 1989). It 'has the advantage of not being physically wearisome; it arouses physiologically but provides mental relaxation concurrently' (Davis and Thaut, 1989).

When used as an intervention to improve wellbeing, it has the advantage of having few, if any, side effects, it has wide cross cultural appeal (McCaffrey and Locsin, 1992), can be provided at minimal cost (Mitchell et al. 2007; Miaskowski, 1996), and it is non-intrusive and easily accessible (Hays et al., 2002), being available in almost any setting (Prenser 2001). No one is excluded from its reach, whatever his or her background or experience. This universality of effect is supported by

²⁴ Anthony Storr (1920-2001) was an English psychiatrist who wrote *Music and the Mind* (1992).

Degmečić²⁵ et al. (2005: 289) who suggest that intelligence is unnecessary for understanding and benefiting from music. They assert that music has a direct effect on our autonomic nervous systems, thus causing different kinds of unconscious bodily responses. They comment: 'Music "touches" a severely mentally retarded patient or a highly educated professor of philosophy in the same way'.

Put simply, music can be used to energise us or relax us, to focus our attention or distract us, to help us remember or forget, to isolate us from the environment or to unite us with others – or simply just to make us feel good (Särkämö et al. 2012: 154).

The question as to whether music can contribute to the reversal of the downward trend of wellbeing in so many of the oldest old is addressed by McCloskey (1985: 75) who asserts: 'We can sustain their dignity and improve the quality of their lives. Music is one language which speaks to them and asks nothing in return.' More specifically, Saarikallio (2011) asserts that, despite functional decline, there is no weakening of emotion regulation abilities at this stage of life; music can continue to be used to improve mood, distract and relax and is a means of coping with some of the challenges associated with ageing.

This notion of music's continued benefits throughout life is reinforced by three surveys carried out in the last 12 years. In a survey of 318 older people aged between 69 and 100, approximately half of the sample rated music as being very important to them (Cohen et al. 2002). Another survey of 280 people, aged between 65 and 75, reported that music was linked to positive emotions and general wellbeing (Laukka, 2007). The third qualitative study (Hays and Minichiello, 2005) demonstrated that music helped to maintain self-esteem, competence and independence as well as the avoidance of loneliness and isolation.

²⁵ Dr Dunja Degmečić is a psychiatrist at the Clinical Hospital Osijek, Croatia and has written extensively on the aesthetics and sociology of music.

There is also some evidence that listening to music may contribute to increased longevity. Bygren et al. (1996) reported that attending cultural events (including concerts) had a positive effect on survival.

3.1.2.2 A brief history of the therapeutic use of music

The idea that music has therapeutic benefits is not new. Indeed, music has been associated with the maintenance of wellbeing since ancient times (Laukka, 2007). For example, the Egyptians used music in the treatment of various nervous and mental illnesses; they called music 'physic for the soul' (Ball, 2010). There is the well-known Biblical example of David playing his harp to soothe King Saul's wrath (1 Samuel 16:23). Homer thought that good music and song 'elevated the spirit and overcame depression of the soul or mind, agony, anguish, anger and sorrow' (Licht, 1946). Plato supported the study of music, saying: 'Music is most sovereign because rhythm and harmony find their way to the inmost soul and take strongest hold upon it, imparting grace, if one is rightly trained' (Strunk 1966: 14).

Pythagoras considered that daily exposure to music enhanced health and Aristotle practised 'psychocatharsis', a belief that emotional tensions could be relieved through listening to music. He believed that music allows one to overcome 'feelings such as pity and fear' and also 'heals and purifies the soul' (Conrad, 2010: 1980). This belief in music's capacity to offer emotional regulation persists today: for example, researchers such as Sloboda and O'Neill (2001) have suggested that the modifying of emotions is the foremost reason for people listening to music.

Many further examples can be found from more recent times. During the Middle Ages, the use of music was so well regarded that, by law, students of medicine also had to appreciate music. They believed that the healing of the psyche through music also affected the body (Conrad, 2010).

During the 18th century, dentists in France would play music in lieu of an anaesthetic (Licht, 1946) thus pre-empting today's theories of distraction. According to Rorke (2001), it was during this period

that physicians began to rely on observation and experimentation for understanding the effect of music on health. The historian Charles Burney wrote of the cure for 'total dejection of spirits' suffered by Philip V of Spain.

The Queen, who had in vain tried every common expedient that was likely to contribute to his recovery, determined that an experiment would be made of the effects of music upon the King her husband, who was extremely sensible to its charms (Burney, 1789: 815, cited in Rorke, 2001).

The historian Armen Carapetyan, in his overview of music and medicine from the Renaissance to the 18th century, wrote of the medical profession's moves to establish a scientific rationale for the use of music 'in the cure of psychopathic cases and of nervous diseases' (Carapetyan, 1948: 146, cited in Rorke, 2001). An example of this work was seen in Richard Brocklesby, a well-regarded physician of the period, who wrote 'Reflections on the Power of Music' (1749). In its six chapters he details his observations regarding the effect of music on physical and mental health and his recommendations for ensuring the greatest response. He even included a chapter on 'the retardation of old age by the application of music'.

The 19th century produced further material. In 1830, there was the publication of 'Early Experiments into the Therapeutic Use of Music' by Dogiel, and in 1846, Chomat's 'The Influence of Music on Health and Life', an exploration of the use of music in healing (Biley, 2000).

This belief in the therapeutic use of music has continued. The neurologist Oliver Sacks²⁶ has seen music effect astonishing physiological and psychological changes in people suffering from Parkinson's disease and in those recovering from strokes. He has said:

Music can lift us out of depression or move us to tears – it is a remedy, a tonic, orange juice for the ear. But for many of my neurological patients, music is even more – it can provide access, even when

²⁶ Oliver Sacks is professor of neurology at the NYU School of Medicine and a visiting professor at the University of Warwick.

no medication can, to movement, to speech, to life. For them, music is not a luxury, but a necessity (Starbucks, 2008).

In 1914, the surgeon Dr Kane, having seen the benefits of having music in recovery wards, provided music for the operating theatre. He found that 'patients almost universally tolerated anaesthetic induction better and also benefited from reduced anxiety before undergoing the "horrors of surgery" (Conrad, 2010: 1981).

During the Second World War, music was again observed to be effective in aiding recovery from surgery. It is from this period that many authors have traced the beginnings of the modern music therapy profession.

Over the last two decades, there has been a growth in interest, both in the medical profession and amongst academics about the use of music in health settings. In the first edition of the journal *Music and Medicine*, the editors, Loewy and Aldridge (2009: 5) stated:

Interest in the field of music and medicine is rapidly growing, as indicated by the increase in conferences, articles, books and the departments of music-related disciplines in hospitals and universities throughout the world.

Spintge (2000)²⁷, at a world congress on medicine and health, spoke of the solid evidence for music having 'reproducible effects and valuable preventive, therapeutic and rehabilitative properties'. Others have reached similar conclusions and there are a number of physiological and psychological conditions that have been suggested as being positively influenced through music:

Through successful music experiences, patients can regain a sense of control, independence, and confidence. Music can be a medium of communication and a strategy for refocusing attention during

²⁷ Dr R Spintge is Chairman, department of Algesiology/interdisciplinary pain medicine, DGS pain Centre, Hellersen Hospital for sport injuries, Germany. His work includes the use of music to alleviate distress, anxiety, pain and disability in clinical situations including pain therapy and geriatrics.

painful procedures or long treatments, and a source of emotional support. Music is clinically recognised to influence biological responses such as heart rate, blood pressure, respiration rate, cardiac output, muscle tone, pupillary responses, skin responses, the immune system and endorphin production. Music can train the body to calm or to accelerate depending on what type of music is used. Sedative music can lower anxiety, pain, tension and stress levels, resulting in less use of anaesthetics and pain medication, a shorter recovery period, higher patient compliance and higher patient and family satisfaction. Stimulative music can be a source of motivation both physically and psychologically and becomes a positive reinforcement during physical therapy and rehabilitation. In summary, music can contribute significantly to medical care providing psychological and physical comfort to patients with various needs (Lane²⁸, 1996).

A growing body of research supports these views. Hargreaves and North (1997) refer to the meta-analysis carried out by Standley (1995) to determine the effect size of music's impact on 129 medical/dental conditions. In only four of these dependent variables was the effect not positive.

The effects and benefits of music may indeed be manifold, but it is not expected that music be regarded as a replacement for traditional medicine. As Gilchrist (2002), a London-based physician comments, 'I use it as an adjunct. I am a very conventional doctor, but I do like to use other sources for emotional problems where conventional medicine has little to offer.'

3.1.2.3 The effective use of music

Despite the widespread belief in the therapeutic effect of music, it has proved difficult to provide rigorous evidence as to its benefits. Research studies, although for the most part positive in their findings, have been criticised for the heterogeneity of their methodology, particularly with reference to the type of music intervention, its modality, length, recurrence and selection. It is not possible to compare studies that use music in such a multitude of different ways and where the choice of music provided is so wide ranging. Choice may be determined by the researcher or the participant and

²⁸ Deforia Lane is the Associate Director of the Seidman Cancer Centre, and Director of Music Therapy, University Hospitals of Cleveland.

may encompass a wide range of genres and styles. Not only is it important to be able to compare studies, it may also be the case that the style of music, the manner in which it is delivered and the individual reactions to it are crucial variables for the assessment of response.

Research studies have identified some criteria for the selection of music that are increasingly regarded as being important. MacDonald et al. (2003) suggest that the selection of the music used for an intervention is of paramount importance if it is to be used effectively for therapeutic purposes. He and many others share the view that taking people's music preferences into account is crucial (Coffman, 2002; McCloskey, 1985). Standley (2000) suggests that it is the strongest variable for the effectiveness of a music intervention. Clair (1996) claims that any effectiveness from a musical intervention is lost if no attention is paid to individual preferences and Kreutz et al. (2008:119) recommend that 'careful screening of participants in terms of their music preferences should be mandatory'. These voices are not the first to advocate a careful selection of music according to participants' tastes. As early as 1929, Vincent and Thompson studied changes in blood pressure through music listening and concluded that interest and appreciation of the music was more important for eliciting a positive physiological response than the genre of music. Many years later, Bartlett et al. (1993) made similar observations. They asserted that listening to preferred music increased positive sensory experiences that resulted in positive chemical changes to the body.

Despite the strong case for assessing preference, a number of researchers have disregarded these recommendations and have used music selected for its structural components and not according to the individual's preference (Chan et al. 2009). For example, Iwanaga and Moroki (1999) found that the sedative properties of the music were more effective than preference in decreasing anxiety. However, Burns et al. (2002: 103) concluded that this approach lacks effectiveness, stating, 'music that may seem sedative to some may be arousing to others and vice versa'. There may also be a negative effect. Burack et al. (2003: 73) commented that listening to 'the "wrong" music can be boring or irritating.' This emerged in a qualitative study with one participant stating: 'The two sessions I've had in a gym with music – one session I don't like the choice of music and I

sometimes feel that people who are choosing music for me are imposing music on me' (Gold and Clare, 2013: 555). This illustrates the importance of ensuring that the participant has some control over the choice of music. The 'wrong' music may intensify depressive syndromes, aggressiveness and anxiety (Trappe, 2012). This was demonstrated in a qualitative study where participants spoke of their avoidance of certain music that made them melancholic and depressed (Hays and Minichiello, 2005).

When using the term 'preferred music' it is not always clear what is meant. Researchers use it in different ways. For example, a participant in a research study may be given a choice of musical genre. This may then be described as 'preferred'. However, within that genre, there is no assurance that an individual will enjoy all the groups, artists or composers that a researcher might select (Gerdner, 2000). The music chosen might be completely unknown or even disliked. This is not the same as music that is well known and much loved, with all its associated memories. A better terminology might be 'familiar and preferred' music. These are the criteria that Janelli et al. (2004) suggest as being important for the effective use of music.

One reason for the emphasis on music preference lies in the generation of emotional arousal, an important element of therapeutic music interventions. It is when positive emotions are aroused that psychological and physiological changes occur in the body (Sequiera et al. 2009). A recent study found that when the music selected was participant-chosen the emotions evoked were more intense (Liljeström et al. 2013; Salimpoor et al. 2009). Reasons for this enhanced arousal may be due to the levels of involvement that an individual has with the selected music, which can be through personal, social or cultural associations, none of which will be present in unfamiliar music (Thaut and Davis, 1993). This explains why one piece of music can elicit very different emotional reactions (MacDonald and Miell, 2000). For example, a particular song or piece of music may evoke memories of an event which itself evokes strong emotions (Sloboda 2003). MacDonald (2000) has concluded that 'the greater the personal involvement, the more effective the possibilities for distraction and relaxation'.

There are further benefits of using preferred music: it provides a greater sense of autonomy (Roy et al. 2008), important for this population of older people, and could lead to a greater commitment and motivation to participate in an intervention programme (Craig, 2004).

This importance of familiarity may explain the differing results of two studies, one by Grewe et al. (2009) and one by Panksepp (1995), in which the same song was played. Results show that participants in the former study experienced a much lower occurrence of chills. It is not clear why. It may have been due to the fact that the participants in the latter study had a greater degree of familiarity with and preference for the music. However, it may also have been due to the methodological differences: Grewe et al. (2009) tested each participant individually; Panksepp tested the group together. It is not known what difference in effect this may have had, but it is interesting to note that Eggermann et al. (2011) found that listening to music when alone was more arousing than when in a group.

In using preferred music as an intervention, the emphasis is placed on the individual participant's relationship with the music rather than its structural content. However, researchers have also recognised the value of the latter for effective interventions used alongside preferred music. A recent study of music's effect on pain relief (Garza-Villarreal et al. 2014) recommended the consideration of valence and tempo in addition to preference. Similarly, Knox et al. (2011) commended music of low intensity and simple rhythmic patterns, and Nilsson (2008), in the conclusion to a systematic review of 42 music interventions, summarised the most efficacious interventions as being those using participant-chosen music of slow tempo and of moderate volume.

There are also examples of successful studies that have only used music chosen according to its structural properties. Notwithstanding Burn's (2002) comments on page 57 that this lacked effectiveness, a study carried out by Chan et al. (2009) used this method to investigate the effect of music on depression in older adults. The participants in this study were given a choice of music

genre to listen to, but the researchers made the choice of music within each genre. The music chosen was considered to be relaxing, with a tempo of 60-80 beats per minute, no accented beats, percussive characteristics or syncopation. Results were positive: statistically significant differences were found between the experimental and control groups for depression scores as well as for physiological measures such as heart and respiration rates.

Another example of this approach is shown in a study by McCaffery and Freeman (2003). They investigated the effect of anxiolytic music on chronic osteoarthritis pain in older people. The music chosen was three distinct movements of works by Mozart. It was reported that the music was enjoyed. Results showed a significant reduction of reported pain in the experimental group whilst the scores of the control group remained constant.

Although participants' preferences were not a priority in these two studies, those in the first (Chan et al. 2009) were allowed a choice of genre; those in the second (McCaffery and Freeman, 2003) were provided with the generally popular works of Mozart. In addition, it is not known whether the music was familiar to the participants; it is only known that the music was enjoyed. It may be that the music selected by the researchers was preferred by at least a proportion of the participants.

Other studies have investigated the efficacy of preferred and non-preferred music. Hekmat and Hertel (1993) compared the effectiveness of preferred music, non-preferred music and silence on cold pressor pain. Results showed an increase in pain tolerance for those who listened to preferred music but no change in the other groups.

A similar study, also using cold pressor techniques, investigated the effectiveness of preferred music as compared with specially designed relaxing music and white noise (Mitchell and MacDonald, 2006). The dependent variables were pain tolerance and intensity. Results showed a significant increase in tolerance to pain as well as a greater feeling of control when listening to preferred music as compared to the other conditions.

These results corroborate the notion that personal preference for the selected music is an influential factor in producing positive therapeutic effects. However, it should be noted that none of these findings is conclusive. The selection of music in these studies is dependent on the researcher/s involved; the specially designed relaxing music or the non-preferred music may be highly attractive to some participants, but not to others. More information is needed.

It is probable that preferred music incorporates all these different elements: familiarity (and therefore past associations with the music), cultural context and structural components (Davis and Thaut, 1989). If preference is a primary factor for selecting music, it follows that the music selected will be very diverse. For example, participants in the study carried out by Garza-Villarreal et al. (2014) selected a wide range of music, varying from pop to folk to classical. Clearly, different genres of music appeal to people of different ages and ethnic backgrounds (Kemper and Danhauer, 2005), and there are a number of researchers who regard all genres as being of benefit. For example, Nilsson (2008) suggests that the genre used does not seem to influence the effectiveness of an intervention, and Gabrielsson (2002) found that strong experiences of music were associated 'with practically any musical genre'.

Given the generally positive findings for the use of preferred music, it is important to know what factors determine preference. Finnäs (1989) suggests that familiarity and the individual's affective experiences while listening to music influence the development of preference. Indeed, these different factors may affect each other. This was recognised by both Berlyne (1971, 1974) and Davies and Davies (1978). They posited that people tend to dislike music that is either over-familiar or unfamiliar. They suggest that this is due to the degree of emotional arousal that the music causes. For example, when music is unknown to the listener, the emotional response is generally low; as familiarity develops, the emotional response grows; if the music becomes over familiar, the emotional response decreases. They therefore concluded that the level of arousal experienced from the music is a determinant of preference. In addition, there are the cultural and personal factors that

vary enormously between individuals (Salimpoor et al. 2011). These personal factors were identified by LeBlanc (1982) as being an important factor in developing preference.

To investigate how preference for a piece of music develops, a recent experimental study (van den Bosch et al. 2013) found that when participants were exposed to unfamiliar music, there was no relation between EDA²⁹ and response to the musical stimuli. However, when exposed to the same music in a second experiment, thereby increasing familiarity, this increase in exposure was found to significantly increase EDA. They concluded that familiarity plays an important role in facilitating emotional arousal in response to the music.

Important as this is, they also suggested that familiarity was not completely essential for experiencing emotional arousal. They proposed that the reason for this lies in the fact that knowledge of the various musical devices that arouse expectations are assimilated over years of music listening. The brain is therefore able to predict, to some extent, the course of the music and facilitate an emotional response. This was explained in a further study by Salimpoor and Zatorre, (2013). They found that the reason for emotional arousal occurring as a response to unfamiliar music was because an area of the brain called the superior temporal gyrus compares new sounds to templates that it has stored from previous listening experiences. This provides an explanation for the successful results of using anxiolytic music as described above.

Researchers have flagged a number of benefits of using preferred music, some already identified. Sloboda et al. (2001) found an association with mood change such as increased energy levels and positivity. Greasley and Lamont (2006) noted an increase in relaxation and in opportunities for reminiscence. Likewise, Davis and Thaut (1989) reported increased relaxation and reduced anxiety. MacDonald (2000) found that music brought back happy memories and induced positive, relaxed feelings. Gold and Clare (2013) found that music acted as a distraction from pain, uplifted mood,

²⁹ electrodermal activity: the variation of the electrical properties of the skin in response to sweat secretion (Benedek and Kaernbach, 2010). An objective indicator of emotional arousal (van den Bosch et al. 2013).

consolated and comforted, aided relaxation, promoted energy and brought back memories. Similarly, Gabrielsson and Lindström (1995) reported improvements in pain relief, the alleviation of grief, consolation and depression. Schäfer et al. (2013) cited spiritual wellbeing and greater ability to cope with negative experiences.

These findings are positive, and it seems that no one disputes the fact that music is an important contributor to the improvement of wellbeing, both physical and mental. However there is still much to be learned. 'The precise dosage needed, the time it needs, and the duration of effects are still unknown' (Garza-Villareal, 2014).

There is a range of opinion as to the length of intervention needed. Chan et al. (2011), in their review of the effectiveness of music to reduce depressive symptoms, concluded that music should be listened to over a period of time so that its effects could accumulate. They also suggested that the effect persisted after the music listening was discontinued. However, this is disputed by Schellenberg (2005), who suggests that the benefits are only short term.

It should also be noted that responses to music can never be guaranteed; they are very individual (Blood and Zatorre, 2001). Every listening situation is different from the next (Helsing, 2012), and a listener may react differently to the same piece of music in different situations (Juslin et al. 2011). What may be relaxing for some, may not be for others (Hanser, 1985, 1988); different music may be wanted by the same individual under different circumstances (Kemper and Danhauer, 2005). In addition, people differ in terms of how important music is to them (Ter Bogt et al. 2011); those with little interest or appreciation of music may receive less benefit. With these varying individual responses, it is not surprising that the benefits from listening to music are not completely certain for everyone (Bertirotti and Cobiauchi, 2008). There is a considerable variety of response between individuals.

3.1.2.4 Differing modalities of music intervention

As well as differing views as to the most efficacious dosage, there is also debate about the presentation of music. A number of research studies have explored the different effects of using live or recorded music, of listening in a group or alone.

It has generally been claimed that listening to music in a group situation can lead to enhanced emotional arousal and an improvement in social contact (Zajonc, 1968). This was corroborated by Lamont (2011), who reported that the experience of chills was more prevalent in live settings. However, there have been contrary findings. In a study that investigated whether a group setting altered levels of emotion felt, Eggermann et al. (2011) found that there was a greater physiological arousal when music was listened to privately; the presence of others reduced the response experienced. It was found that the group situation led to less concentration and results suggested that the role of attention may contribute to the experience of emotional arousal when listening to music. Although this experiment was conducted in a laboratory and may not represent the reality of a natural concert setting, other studies by Ziv (2004), Grewe et al. (2007) and Sherratt (2004) produced similar findings. Participants in the latter study showed a preference for solitary listening. It has also been found that different emotions are experienced when listening alone and when in the presence of others (Juslin et al. 2008).

There is also debate as to whether music should be presented live or recorded. The emergence of different technologies during the late 20th and early 21st century has had a substantial impact on the different ways that people interact with music (Sloboda et al., 2009) and although many of these advances have yet to affect the listening habits of the care home population (Sixsmith and Gibson, 2007), the advantages are considerable. Recorded music can be provided at a relatively low cost, can accommodate individual preferences and can be accessed at a time convenient to the individual.

However, there are elements inherent to a live performance that cannot be replicated with recorded music. As Katz (2004) observes, 'recordings detach music from traditional times, venues and rituals' and most research to date has shown greater benefits from listening to live music.

For example, Bailey (1983) compared the two modalities in a study investigating mood change in response to music amongst cancer patients. Results showed that the response to the live performances was of greater significance with a significant increase in mood and vigour and a decrease in anxiety, fatigue and physical discomfort.

Sherratt et al. (2004) carried out an observational study on the emotional responses of dementia sufferers to music and compared the effects of live music, recorded music and no music. Results showed that there was a greater response amongst those in the live condition.

Part of the reason for the greater response to live music may be due to the possibilities for communication between performers and the audience. As di Carlo and Guaitella (2004) observe, a live performance allows for the communication of emotions, not only through the music, but also through gesture and facial expression. It may also raise general levels of interest (Thompson et al. 2005).

Not every study has been so clear in its findings. For example, a study by Baker (2001) compared the two modalities on patients suffering from post-traumatic amnesia. Twenty-two participants listened to either live music, recorded music or no music once a day over six consecutive days. Results showed no significant differences between the live and recorded conditions and may have been due to the provision of preferred music for the recorded group.

This finding is of particular importance for the care home population. Whatever the advantages of a live performance, the opportunities in a care home are necessarily limited due to the costs involved and the possible limitations of the artists prepared to perform in this environment. Recorded music,

on the other hand, can accommodate a wide range of preferences due to the limitless range of music available.

3.1.2.5 A comparison of music and alternative methods of distraction

Although music is considered to be a powerful distraction because of the emotional component of people's response, there has also been interest in comparing the effect of music with other methods. Mitchell et al. (2006) investigated the effect of preferred music on pain tolerance and intensity compared to two other stimuli found effective in previous research studies: mental arithmetic, a cognitive task, and humour, which is thought to lead to emotional engagement similar to music. Pain was induced by cold pressor. None of the distractions affected pain intensity significantly. However, the preferred music showed the most favourable results, with significant increases in tolerance levels and perceived control.

Villarreal et al., (2012) carried out a similar study, also in a laboratory. In this study, the alternative stimuli were unfamiliar environmental sounds, mental arithmetic and a control (pink noise), as compared to music composed by Mozart (said to be unfamiliar). Findings showed that the active distraction of mental arithmetic reduced pain more than the two passive distractions, both of which showed the same levels of effect. Again, then, we have two similar studies but which show different results. Two areas of difference lie in the selection of the music and in the experimental nature of the pain stimulus. The selection of music differed in that the first study used music that was participant-selected and familiar. This may have increased the drive to listen attentively and therefore have been more effective as a distraction. The second study deliberately chose music that would have been unfamiliar, 'virtually unknown to the layman' (Villarreal et al. 2012: 29397). Familiarity may therefore be crucial to the most successful usage of music. Although an active distraction such as a mental arithmetic task may have an effect, its use in clinical situations is not viable as it would be unnecessarily stressful for many pain sufferers. It is also dependent on individual cognitive abilities and mental status. Listening to music, on the other hand, is almost

universally appreciated and therefore the method of distraction most widely recommended, particularly with older people.

3.1.2.6 Difficulties of research using music interventions

As discussed, the findings of several studies have supported the notion of music being an effective device for assisting pain relief (Knox et al. 2011; Mitchell and MacDonald, 2006; Siedliecki and Good, 2006; McCaffrey and Freeman, 2003), depression (Guétin et al. 2009; Hanser and Thompson, 1994; Chan et al. 2009) and anxiety (Guétin et al. 2009). However, results overall have been inconsistent and variable. As Aldridge (1994: 215) comments, 'there is a general absence of valid clinical research material from which substantive conclusions can be drawn'. Three different reviews draw attention to the difficulties of providing this.

A Cochrane³⁰ review that evaluated the effect of music on both acute and chronic pain concluded that although listening to music reduces pain intensity levels, the effects are small and that the specific use of music for pain relief is insufficient to be considered clinically important (Cepeda et al. 2006), and should not be used as a first-line treatment of pain. Nilsson (2008) carried out a systematic review of the anxiety and pain reducing effects of music interventions. Eighteen out of 56 studies were excluded due to methodological weaknesses, such as non-randomisation (thereby demonstrating the commonly observed failings of many studies). She concluded that music can have an effect, but this was only found in approximately 50% of the reviewed articles. A further meta-analysis of 22 quantitative studies that investigated music's effect on anxiety and agitation had similar issues with varying results dependent on the type of intervention employed (Pelletier, 2004). It has been suggested that these differing and inconclusive results are due to methodological failings such as small samples, lack of randomisation, the heterogeneity of the studies, and the

³⁰ Cochrane is a global independent network of health practitioners, researchers, patient advocates and others. They promote evidence-informed health decision-making by producing high quality, relevant, accessible systematic reviews and other synthesised research evidence. Their work is internationally recognised as the benchmark for high quality information about the effectiveness of health care (www.cochrane.org).

variety of assessment measures as well as the different methods of selecting and delivering the music (Evans, 2002a).

The heterogeneity of the studies that have been carried out is illustrated by the variety of methods that have been employed: randomised controlled trials, quasi-experimental designs, surveys, case studies, focus groups, observations and interviews. Within these categories, there have been variations in scale from a one-off music intervention of 30 minutes to a longitudinal study of two years. The types of music intervention have ranged from listening to recorded music and listening to live music to more interactive involvement. A variety of conditions have been selected as dependent variables on which to measure the effects of music: acute pain, chronic pain, quality of life, depression, mood, anxiety, agitation and stress. These variables have been assessed by a wide variety of different measures.

Many of these studies have been carried out on participants of all ages in the population. There are additional issues when researching the oldest old. This is primarily due to the physical and cognitive decline common to their age, as well as to the difficulties of access; older people are often more reluctant to take part in research studies. It is therefore unsurprising that research in this population has been limited. However, it is important to investigate further as music interventions may be particularly useful for older people. For example, for those who respond badly to pain medication or who prefer not to use it, a music strategy can be used (Whipple and Glynn, 1992).

Despite these issues, there has been no halt to the number of studies undertaken. There is recognition of the need to provide statistical evidence as a response to the demand from health professionals for evidence based medicine:

The demand for evidence that is produced along the same lines as drug trials in the pharmaceutical industry, while seeming somewhat bizarre for a very small field with arguably a narrative tradition of

explanation and inquiry, is nonetheless imposed as an anxiety inducing necessity, in order to continue to be funded to provide service (Edwards, 2005: 3).

3.1.2.7 The effect of music on chronic pain in older people

Whilst various research studies have investigated the effect of music on acute pain, such as in post-operative situations, there has been less research carried out on the effect of music on chronic pain and only one study in an older population group. Until relatively recently, it was not considered to be an effective intervention. McCaul and Haugtvedt (1982) were of the view that distraction could only be effective for short time periods, and therefore not able to benefit chronic pain. However, in a later study, Mitchell suggested that long-term pain relief is possible. Mitchell, together with MacDonald (2006) believe that listening to music can alleviate the negative emotions associated with pain as well as lessening the sensation of pain. They ascribe this outcome to the relaxation, distraction and sleep that music can initiate. Hanser (2010) comes to a similar conclusion, although she attributes the positive outcome to mood regulation rather than better sleep. Music has also been credited with evoking memories that can provide a link to a life before pain and thus provide an escape from the current pain experience (Gold and Clare, 2013).

To investigate this, there have been experimental studies both in naturalistic settings (Mitchell et al., 2006) and in laboratory settings (Villareall et al. 2012; Mitchell et al. 2006). Although the latter are of use, clinicians and health care providers are more likely to accept findings from the former (Loewy and Aldridge, 2009). This is due to the fact that short-term laboratory experiments are unable to replicate the complexity of the chronic pain experience (Standley, 1991). There have also been some qualitative studies (Hays and Minichiello, 2005; Gold and Clare, 2013), which are helpful for identifying some of the key issues connected with music and older people.

This section will take an overview of the relevant studies, rather than a detailed assessment of methodology, which will be undertaken separately.

As has been discussed, chronic pain is experienced by a large number of older people. One of the earliest experimental studies to investigate the effect of music on chronic pain was carried out by Schorr (1993). Thirty participants, some of them over 60, and all suffering from rheumatoid arthritis, listened to their preferred music for 20 minutes during peak periods of pain. Results showed that participants' pain perception threshold increased significantly during the listening period and for a period of time following. It was noted that although this one short intervention demonstrated positive results, a short music intervention is not able to bring about a lasting change. It was suggested that a future study should employ a longitudinal approach.

Ten years later, McCaffrey and Freeman (2003) carried out an experimental study on the effects of music on chronic pain in older people with osteoarthritis, a common condition of the care home population. Instead of one 20-minute listening period, the music intervention involved listening to music for 20 minutes every day for 14 days. Results showed steadily decreasing scores of pain intensity and perception over the 14-day period in the experimental group whilst the scores of those in the control group remained steady. This was the first study to track results over a longer period and the authors concluded that the results established the efficacy of music as an aid to chronic pain relief. The selection of music in this study was made by the researchers, who reported that it was enjoyed by the participants.

These two studies alone demonstrate the heterogeneity of methods employed. One used preferred music, the other used researcher-selected music; one used a one-off intervention; the other employed a longer term intervention. One used a control group; the other did not. Hence we have two studies with multiple differences in methodology, making comparison impossible, but both showing positive findings for the effect of music on chronic pain.

Further studies, using different methodologies, have been carried out since then. For example, Mitchell et al. (2007) carried out a survey that sought to investigate the benefits of music on chronic pain through the collection of both quantitative and qualitative data. The primary findings supported

those of the previous two studies, showing the potential of music to distract from pain and to aid relaxation, with positive effects on depression and mood. Because of the method of investigation, the findings reveal the uses and benefits of music over a longer term: namely the relief of chronic pain and improved quality of life. An additional finding was the suggestion that pain relief may be more likely amongst those who consider music to be of high personal importance. This could provide an additional explanation for the range of results in experimental studies.

A qualitative study sought to identify the different factors involved in music listening for those with chronic pain (Gold and Clare, 2013:556). A positive finding was that music enhanced physical and mental relaxation, which led to pain relief; it was described as consoling, like a comfort blanket; it triggered memories of good times, of times when there was no pain. Additionally, music acted as a distraction from pain. One participant referred to both distraction and mood regulation: 'I think it's the distraction ... and I think again it's the lift of the spirits I'm not focused on pain, I'm focused on something different. But the music is the thing.'

This supported the statistical results of the previous two studies. However, it was also found that when the pain was overwhelming there was a decline in music listening as it demanded too much energy or concentration.

The studies referred to above have all shown positive findings, but this is not true of all of the relevant studies. An example of inconsistent findings was shown in two experimental studies carried out by MacDonald et al. (2003) to investigate the pain-reducing effects of music following surgery. In both cases, participants selected the music according to their preferences. In the first study, participants listened to music following minor foot surgery. Results showed a significant reduction of anxiety but no changes in pain perception. It was concluded that the levels of pain experienced were very low and probably beyond the discrimination of the assessment instrument. In the second experiment participants listened to music following the more serious hysterectomy surgery. Results showed no significant findings for either pain or anxiety although a small reduction was experienced

in both. One of the reasons suggested for these limited results was that the extent and severity of pain perceived can be too intense to allow for a positive response to listening to music. This reflects the findings of the qualitative study by Gold and Clare (2013) above. Finlay (2014) suggests that this may be due to the musical distractor being of 'insufficient magnitude for attentional engagement when placed in opposition to pain signals'.

There has also been interest in the use of music to provide longer term benefits on pain perception. Finlay (2014), although finding consistent reductions in pain intensity and unpleasantness after a music-listening period, found that the impact was short term. There was no evidence for on-going benefits. Her sample was small and, as she suggests, research should investigate this further using an increased sample size.

Although there are a number of positive findings in both chronic and acute pain situations, it is clear that further randomised controlled trials need to be performed in order to be more confident in such conclusions (Biley, 2000). In addition, many of the studies use small samples, which raises questions as to whether the findings are generalisable. Evidence for the effectiveness of music is still limited (Gold and Clare, 2013).

3.1.2.8 The effect of music on depression and anxiety in older people

The effects of music on depression and anxiety are often investigated together since both conditions are reliant on mood change and require similar assessment measures. As has been discussed, music is widely recognised for its ability to alter mood, and it has been suggested that this is its most important function (Juslin and Laukka, 2004; North et al. 2000). It can be used for relaxation, arousal, comfort and for evoking emotional memories (Juslin and Laukka, 2004); it can induce positive affect (North et al. 2004), cope with negative states (Miranda and Claes, 2009) and achieve desirable moods (Västfjäll et al. 2012).

Given the risk factors of suffering from depression in terms of physical health, and the associated costs of its treatment, it is imperative that every non-pharmacological method for its reduction is trialled. It is thought that listening to music might reduce depression (Chan et al. 2012).

There are varying opinions about music's effectiveness in alleviating depression and anxiety. For example, Biley (2000) suggests that there can be a greater degree of confidence in research investigating psychological variables (as opposed to physiological ones) as a consistent positive impact has been found. However, a later review by Standley (2000) suggested that depression did not show as large a response to music interventions as other variables.

Examples of studies that have shown no benefit of a music intervention are cited by Iwanaga and Moroki, (1999). For example, Rohner and Miller (1980) found no statistically significant differences in self-reported anxiety when listening either to sedative music or when in a no-music control condition. Although a trend for some lowering of anxiety was observed, this did not reach significance. A further study, conducted by Logan and Roberts (1984), also compared the use of sedative music to a no-music condition. In this case, the results showed that tension decreased in the control condition but increased in the music condition. Reasons were not given for this negative effect. However, there is the possibility that the music used was not as efficacious for the purpose as had been anticipated. It was described by Hanser (1988) as being typical of the genre of music that evolved in the 1980s. The New Age composers of that time advocated the use of environmental and electronic sounds for the purposes of relaxation. However, this particular style of composition may not have been the preferred choice of the participants of the study and could be a reason for the lack of effect.

Unlike pain, depression cannot be simulated in laboratory conditions; studies have to be carried out in naturalised environments. Methodologies to date have included randomised control trials, quasi-experimental interventions and qualitative studies. Despite the high incidence of depression in the older population, few studies have been conducted within this group. Anxiety, on the other hand,

can be simulated, but its relevance to the experience of anxiety in older people is very limited. As with depression, only studies taking place in naturalised environments have been undertaken. Similarly to the studies of chronic pain, those that have investigated the two conditions of depression and anxiety show widely varying results, thus making it impossible to reach firm conclusions (Chan et al. 2011).

A Cochrane report (Maratos et al. 2008) assessed the effect of music on depression. It found that only five studies out of a potential 16 met their criteria for inclusion. Three of them researched the older population, although there were none in the 'over 85' category. Due to the diversity of the music interventions and assessment measures, it was not possible to conduct a meta-analysis and the studies were judged to be of low quality. As an example of the diversity of intervention length and quantity, sessions ranged from an hour to 90 minutes; the number of sessions per week ranged from once a week to six times per week; the maximum number of sessions ranged from eight to forty-eight. This illustrates one part of the methodological approach that rendered any proper comparison impossible. Of the five studies, four showed a reduction in depressive symptoms whilst the fifth reported no change. The authors concluded that music does have a beneficial effect on depressive symptoms but that there is a need for further research.

It is the heterogeneity of these studies that makes it so difficult to assess their results. As well as differences in length of music intervention and type of music delivered, there are differences in the assessment measures used and the populations assessed. In the review by Chan et al. (2011), populations range from older people with mild to moderate depressive symptoms living independently, to cancer patients suffering from anxiety and depression, to those with Alzheimer's disease. These widely varying scenarios, although possibly all amenable to music interventions, are impossible to compare.

Despite this, results from relevant studies are still of interest. A widely cited study by Hanser and Thompson (1994) investigated the effectiveness of a programme of music developed for older

people, with a mean age of 68 years, suffering from depression and living at home. Thirty participants listened to music regularly over an eight-week period. In addition to listening to music, other treatments were carried out at the same time, such as gentle exercise and facial massage. Findings were compared with those on a waiting list and demonstrated a reduction in depressive symptoms. However it was not possible to measure the effectiveness of the music intervention alone.

A similar study was conducted by Castillo-Pérez et al. (2010). Seventy-nine participants suffering from low and medium levels of depression were randomly assigned to a music group and a psychotherapy group. Participants in the music group listened every day on their own for 50 minutes, with one group session per week over a period of eight consecutive weeks. They found a statistically significant effect for the benefits of the music, which demonstrated greater improvement than psychotherapy. As with the study by Hanser and Thompson (1994), the researchers concluded that listening to music was beneficial in the treatment of depression in conjunction with other therapeutic interventions. These two studies included interventions that consisted of more than just music listening. There were other therapies included which required the presence of a music therapist.

A subsequent review of selected studies evaluated music listening alone (Chan et al. 2011). Despite the amount that has been written on the subject, the authors state that 'little is known about the efficacy of music in the mediation of depressive symptoms'. The review included 17 studies, 11 of which showed positive findings. However, as in the review on chronic pain (Cepeda et al. 2006: 332), it was impossible to conduct a meta-analysis due to the differences in methodology, assessment measures and style of music interventions. To illustrate the variation in music interventions, the period used for music listening ranged from one day to 16 weeks; some took place daily, others once a week; some lasted for ten minutes, others for an hour; some offered a choice of genre, some involved 'sleep-inducing music', some 'light classical', some 'relaxing music', some 'classical', others self-selection. Assessment measures were equally varied, with ten different

scales used. The quality of the randomised control trials was considered to be good but the lack of clear randomisation methods and small sample sizes reduced the ability to make firm conclusions about their effectiveness. However, 11 out of the 17 studies showed positive findings and the pool of knowledge in this field was increased. As a result of the study, the authors recommended that the average time needed for an intervention to be effective is three weeks, with results accumulating over time.

An example of the accumulative effect of the intervention is shown in a study by Chan et al. (2009). This was for 47 depressed older people aged between 60 and 80 living independently in Hong Kong. The experimental group listened to music for 30 minutes once a week over a period of four weeks. A choice of four different musical genres (Western, Chinese or Asian classical and Western jazz) was available, and participants were encouraged to listen for a further 30 minutes every evening. In addition, defined structural elements of the music were considered: a tempo of between 60 and 80 beats per minute, no accents, syncopation or energetic rhythms. This latter recommendation was also endorsed by Punkanen et al. (2011) who suggested that many depressed patients dislike high-energy music, perhaps due to a lack of energy, a common symptom of depression. The control group had no intervention. Results showed that depressive symptoms reduced by the third week and became statistically significant after the four-week period. However, there were limitations, chief of which was the lack of a clear explanation of the cause of the reduced symptoms. Adherence could not be monitored and it was admitted that the results could have been due to a placebo effect.

Despite those challenges, these findings compare favourably with those of a study by Clark et al. (2006) that investigated music's effect on anxiety, depression and pain amongst those undergoing radiation therapy. Again, this was a randomised controlled trial with 63 participants. The experimental group listened to self-selected music which could be listened to as and when participants chose, and for as long as the radiation treatment continued. They were also

encouraged to look for a positive outcome. The control group had no intervention. Results showed no significant changes, and the symptoms of depression remained stable in both groups.

The results of these two studies raise many questions. Clark et al. (2006) chose a type of music intervention widely regarded as being the most efficacious in therapeutic situations, whereas the study conducted by Chan et al. (2009) had only a 30-minute weekly intervention with music of limited choice. Two participants even withdrew due to their dislike of the music provided. Despite these differences in the content of the intervention, the latter was successful, the former was not. It may be that the major physiological issues experienced by the population in the study by Clark et al. (2006) was the over-riding factor in the lack of positive outcomes.

A further study of interest was carried out by Guétin et al. (2009). This was the only study to explore music's effectiveness in a nursing home environment. Thirty participants took part with a mean age of 86; they all suffered from both anxiety and depression with mild dementia. Participants were randomised into two groups, an experimental group who listened to their preferred music for 20 minutes once a week over a period of 16 weeks and a control group who spent the same period of time reading. Results showed a significant improvement in the experimental group for both conditions from week four through to 16 with the effect being sustained for up to eight weeks. This was a further instance of the benefits of music accumulating over time. This intervention had the particular advantage of being able to stream the music via headphones into each person's room, thus avoiding any problems of adherence. Good levels of adherence, together with length of intervention and use of preferred music, may be the reasons for the successful outcome of this study.

3.1.3 Summary

This review (Chapters Two and Three) has endeavoured to give a description of the oldest old population in the UK: its size (present and projected) and its characteristics. It has depicted the

challenges that this age group faces both as a demographic characteristic and for the individuals within it. The particular issues of pain, depression, anxiety and stress have been described and the use of therapeutic music as a possible aid discussed. Findings from previous research studies have been examined for their range of enquiry, their results (whether positive or negative), their different populations and their different methodologies.

The studies discussed for the three conditions of pain, depression and anxiety show the complexity of the research process and the difficulty of determining the most accurate assessment method and mode of music intervention. The very heterogeneity of situations and populations combine to make this field of research very challenging. It is not surprising that there are so many outcomes and that the findings are often contradictory.

Despite the inconsistencies in results and the controversies over methodology, the demand for developing this area of research is strong. The benefits that could be accrued from further knowledge of the therapeutic use of music are widely acknowledged and there is a desire to further refine methods of best practice.

Within the wider population, issues of reliable assessment measures, the most efficacious selection of music, the method of its delivery and the duration of the intervention all need to be addressed to enable greater accuracy of results. These have all been highlighted in this chapter. The Cochrane reviews (Cepeda et al. 2006; Maratos et al. 2009) highlighted the failings of past research and called for more randomised controlled trials and larger samples. Their size has been a hindrance to reliable statistical analysis, and this is something that needs to be addressed in any future research. Any research undertaken must endeavour to address all these issues.

The care home population adds considerable complexity to the challenges of this research. Attention needs to be paid to the physical and mental frailty of the population. This will affect every aspect of the research process, including the operationalisation of questions such as, how is music

preference ascertained? How is the music delivered? For how long? What methods of assessment will give the most accurate results?

Due to the difficulties of research with older people, there have been very few studies that have investigated the effects of music listening in the care home population. Those referred to in this review of the literature (Chan, 2009; Guétin et al. 2009) showed positive results for the reduction of depression and anxiety respectively, but recommended further research to build on their findings. This vulnerable but expanding population is one that would greatly benefit from an intervention that has the capacity to improve their quality of life.

In response to the reviews suggesting the need for further research into music's benefits with respect to pain, depression and anxiety, research questions were formulated which aim to provide some answers to the issues raised. They are as follows:

- What impact does regular listening to preferred music have on levels of pain, depression and anxiety in older people in long term care?
- To what extent do the positive effects of music continue after the period of the music intervention?
- What are the factors that determine the range of individual response to a music intervention?

The methodology used to address these questions is detailed in Chapter Four, and is followed by a description of the pilot studies.

4 Chapter Four

4.1 Research methodology and pilot studies

This chapter will discuss the different methodologies that are used to study this field of enquiry and explore some of the challenges involved in researching both the effects of music and the oldest old. There follows an overview of the research design and methodology, an account of the ethical considerations made and a description of each of the three pilot studies carried out. Findings and subsequent adaptations are detailed.

4.1.1 Rationale for methodology

Although the literature review provided several examples of research studies that demonstrated positive findings for the effect of a music intervention on pain, depression and anxiety, it was also evident that methodological failings have contributed to the limited acceptance of music's therapeutic benefits and its implementation in clinical settings. Health professionals are looking for what they regard as a valid justification of music's effectiveness and impact (Daykin, 2012). Financial resources are limited and there is little willingness to allocate funds to an intervention that is not sufficiently verified. Subjective reports on the effects of music are not hard to produce, but there is a need for 'factual, reliable and objective answers' (Halperin and Heath, 2012:28) and this has proved elusive. This demand for evidence lends weight to the idea of using a methodology similar to that employed in medical trials.

The demand for evidence that is produced along the same lines as drug trials in the pharmaceutical industry, while seeming somewhat bizarre for a very small field with arguably a narrative tradition of explanation and inquiry, is nonetheless imposed as an anxiety-inducing necessity, in order to continue to be funded to provide service (Edwards, 2004: 3).

Within the medical research community, there is a recognised hierarchy of the reliability of various methodologies and the Randomised Control Trial (RCT) is widely viewed as providing the highest level of evidence possible in a research study (Evans, 2002b). It is for this reason that so many recommend its use. This methodology developed from the theory that human activity can be measured in the same way as activity in the natural environment. Although the study of human life is more complex than natural phenomena (Bowling, 2009), it is nevertheless possible to measure the human response to an intervention, whether a type of medication, a treatment or, for the purposes of this study, a 'dose' of music. It is not difficult to understand why health professionals favour this approach.

One of the reasons for the use of this methodology is the control of variables that can be achieved. There are several variables that affect an individual's response to music. They include gender, cultural background, age, cognitive abilities, previous experience of music, expectations of outcome, attitudes to research, severity of stress or pain, personality differences and acceptance of treatment (Dileo and Bradt, 2009). By randomising participants into experimental and control groups, these variables can be controlled. The limitations of studies that do not carry out randomisation were highlighted by Nilsson (2008) in a review of music's effect on anxiety and pain. According to Schulz et al. (1995), results of non-randomised trials can be over-estimated by 40%.

However, despite the strengths inherent in a RCT, there are also some potential weaknesses due to difficulties in obtaining accurate measurements. Some of these are due to the ethical considerations that are put in place to assure the protection of participants. For example, the requirement to treat people fairly demands that participants are given sufficient information regarding the purpose of the research in order that informed consent can be given. Participants, in a desire to be helpful, may report greater improvement in their levels of pain, depression and anxiety than is actually the case. It is unlikely that the researcher would know that this was taking place.

There is widespread acceptance for the use of self-report for the assessment of both pain and mood. For example, Melzack and Katz (2001) consider it to be the most reliable and valid measure of the experience of pain. As Hanser (2010) observes, there is no universal response to an injury; everyone has a different pain threshold. Its existence cannot therefore be assessed or graded by others: 'pain is whatever the experiencing person says it is' (McCaffery and Beebe, 1989). Similarly, Bowling et al. (1996) consider that self-report is a more powerful predictor of wellbeing than objective measures.

However, despite the widespread use of this approach, some researchers have voiced concern. For example, Thomas and Diener (1990) suggest that memory biases may distort accuracy and Schwarz and Strack (1991) suggest that momentary factors such as temporary mood disturbances may do the same. As the older population are more liable to both memory bias and mood changes, these warnings need to be taken into account.

Herr and Garand (2001) in their study of the assessment and measurement of pain in older people, although aware of these issues, are convinced of the accuracy of self-report. They conclude:

The patients' self-report of pain is the most accurate and reliable evidence of the existence of pain and its intensity. This holds true for patients of all ages, regardless of communication or cognitive deficits.

There are further possible causes of inaccuracy, none of which is easy to detect. For example, participating in research may itself engender anxiety, the very condition that the intervention is designed to reduce. Alternatively, participants may want to show themselves in a good light or give what they consider to be the 'right' answer. In addition, the interviewer may inadvertently bias participants to answer in a particular way by asking leading questions.

These concerns regarding accurate assessment are validated by the inconsistency of results; previous studies frequently disagree with each other (Haynes, 2002) and expose the difficulties that

researchers have encountered. Cochrane³¹ reviews of music's effectiveness to relieve pain, depression and anxiety draw attention to some of the weaknesses of past research.

The Cochrane review, carried out by Cepeda et al. (2006), evaluated 51 studies of music's effect on pain perception. The authors concluded that, whilst there is a small effect on pain, it is insufficient to be considered clinically important. Similarly, the review of music's effect on depression carried out by Maratos et al. (2008), found that the small number (only five met the inclusion criteria) and the low methodological quality of the studies made it impossible to be confident of its effectiveness. A further review by Bradt et al. (2013) assessed the effectiveness of music on stress and anxiety. The authors concluded that there were benefits, particularly when the music was participant-selected, but again recommended that the clinical significance was unclear and that the findings needed to be interpreted with caution.

A number of reasons have been suggested for the poor quality of the evidence. As well as a high risk of bias (Bradt et al. 2013), Evans (2002a) listed methodological failings such as small samples, lack of proper randomisation, the heterogeneity of the studies, the variety of assessment measures and the different methods of selecting and delivering the music.

Although the randomised control trial, with its use of quantitative data, has many strengths, it is far from being infallible as can be deduced from the discussion above.

The urgency for finding 'factual, reliable and objective answers' (Halperin and Heath, 2012: 28) as to music's ability to affect positive changes in this vulnerable population, is coupled with the need for more information on the factors that influence the individual response to music. The quantitative data can assess whether music has been of benefit and whether the findings are of any significance. However, they are not able to identify reasons for individual responses.

³¹ Cochrane: Provider of systematic reviews of research evidence about the effectiveness of health care.

These can be better assessed through the use of a qualitative methodology, whether it be in the form of case studies, focus groups, observations or interviews. Although qualitative methodologies are discounted by many researchers due to the greater risks of inaccuracy (Argyle, 1978), they do, however, have a place in an investigation of this kind since the main issues can emerge from the data which provide the opportunity to focus on the individual's unique response (in this case, to music). This approach could contribute to a greater understanding of any shifts in mood or pain perception resulting from a music intervention and give a deeper insight into some of the reasons for music's effect.

As discussed in Chapter Three, both quantitative and qualitative studies have been carried out to investigate music's effect and influence. Some researchers are of the view that the use of both methodologies (i.e. a mixed methods approach) should be recommended. For example, Dileo and Bradt (2009), whilst advocating the use of rigorous research to find best evidence, are also in support of the use of a multiple evidence base because of the uniqueness of the arts. They suggest that by using qualitative research methods, a better understanding of the participant's experience can be gained and factors identified that either contribute to or limit music's effectiveness. This view is also held by Rooney et al. (2012), who said, 'I think the safest bet ... is to use mixed measures. The weakness of each type is offset by the strengths of the other'.

This is the approach that is used in this study. The quantitative methods of a randomised control trial can determine whether or not music is effective in reducing levels of pain, depression and anxiety. This is the principal purpose of the study and the statistics collected form the primary data set. However, the use of qualitative methodology can allow for a greater understanding of the different factors that inform individual responses to the music intervention.

The number of studies that have employed experimental research methods to explore the use of music to affect physiological and psychological health is expanding rapidly. There is growing interest in investigating how music can better be deployed in healthcare settings. However, there

are few studies involving the care home population.

4.1.2 Some methodological challenges related to music interventions and older people

As discussed in the literature review, there are a number of difficulties associated with research of the oldest old. Suzman et al. (1995: 4) describes the 'significant and unprecedented methodological problems' encountered and suggests that they are the cause of the small numbers of studies undertaken in this area. These are discussed below with relevant examples from the literature.

4.1.2.1 Recruitment

One of the challenges that the researcher faces lies in recruiting a large enough sample. This has been a frequent criticism of studies carried out amongst all ages. It is not therefore surprising that the recruitment of older people in care homes is a particular challenge.

Access to potential participants requires the initial co-operation of the manager of each home, or, as is often the case, the head office of a group of homes. In many instances, such requests are viewed as an unwelcome interference to the already demanding business of care home management. Not only is additional paperwork required (such as the completion of Disclosure and Barring Service³² forms) but time has to be taken in assisting the researcher to access participants. The majority of applications result in a negative response.

In cases where homes are receptive to the possibility of hosting a research project, there follows the challenge of recruiting the participants themselves. For this research study, there were two requirements: sufficient cognitive ability to provide informed consent and to take part in an interview, and sufficient hearing to be able to respond to the questions and to listen to the music. The

³² The Disclosure and Barring Service. For individuals working in certain positions such as healthcare, a valid DBS disclosure is a legislative requirement. It is to prevent unsuitable people from working with vulnerable groups.

numbers of those who fulfil both these criteria are likely to be in the minority in any care home, thus limiting the number of potential participants.

Given these difficulties of recruitment, the use of small samples is understandable. Although strong in many aspects of the methodology employed, this was the principal limitation of the studies referred to below.

A study carried out by Guétin et al. (2009), explored the effect of music on anxiety and depression in dementia patients aged between 70 and 95, over a 16-week period. The study had many strengths: the method of randomisation was clearly explained and results were evaluated under blind conditions. However, an initial sample of 30 was small and attrition resulted in a 20% reduction. This limited the strength of the analysis and reduced confidence in the results. Sample size was also an issue in other studies involving the use of music with older participants: Schorr, (1993) investigated its effect on rheumatoid arthritis with 31 participants; Hanser and Thompson (1994) investigated anxiety and depression levels in 30 participants; Chan et al. (2009) investigated depression, heart rate and blood pressure in 50 participants. Despite the methodological strengths of these studies, the significance of the results is reduced by the small samples. Studies with inadequate sample sizes lack the power needed to detect changes and can result in false positive or false negative results or both.

4.1.2.2 Assessment measures

The selection of suitable assessment measures is fundamental to obtaining reliable results. Within this population, this is a particular challenge. As Taylor and Herr (2003) observe, 'no single scale is appropriate for all older adults, particularly those with cognitive impairment'.

As already discussed on page 81 of this chapter, there may be several issues (cognitive, psychological, social or communicative) that affect the accuracy of response from older participants

(Quinlan-Colwell, 2012). There are three issues that need to be addressed when selecting the most suitable assessment measures for this population. The items that make up the assessment scales must be relevant, comprehensible and not unduly onerous. As there are few scales that are specific to this population, there are several instances of age-related irrelevance. For example, two items from the Zung Self-Rating Depression Scale state: 'I eat as much as I used to', and, 'my mind is as clear as it used to be'. Decline is inevitable at this stage of life and although changes in appetite are a symptom of depression, some modification should be expected in old age. A decline in memory is also considered to be normal amongst this age group and is not necessarily an indicator of depression.

Items must also be easily understood. Both the statement or question and the response categories must be clear, unambiguous and within the capability of everyone to understand and respond. For example, when Likert scales are used, it is generally recommended that a seven or nine-point scale is used to generate a more valid response. However, Rodgers and Herzog (1992) suggest that a smaller number of response categories may give rise to fewer difficulties for the respondents and result in greater validity.

The wording of response categories also needs to be considered. For example, the answers to a question or statement regarding the frequency of the pain experience might be 'never', 'sometimes' or 'all the time'. The use of the term 'sometimes' may be open to differences in understanding. Some might understand it to relate to 20% of the time, whilst others might relate it to 50% of the time. It is therefore suggested that, rather than relative-frequency, absolute-frequency responses are used, such as 'everyday' or 'once a week' (Schaefer and Olson, 1981).

Lower energy levels, characteristic of this population, take their toll. The use of long assessment scales may therefore be overly onerous. As Wallace et al. (1992) observed, 'lengthy scales risk destroying the very fragile rapport that is necessary for interviewing, and the irritation and fatigue they cause will doubtless carry over to the remainder of the interview'. If an assessment is too long

or demanding, the levels of attrition may increase.

Although the reliability of an index improves with increasing length, it is often the case that many of the items used are merely paraphrases of other items. For example the State-Trait Anxiety Inventory (STAI-Y) scale, used to measure anxiety, includes the statements, 'I feel tense' and 'I feel strained'. This repetition can be annoying. It has been suggested that the elimination of duplicated items may lead to a less mechanical repetition of responses and enhance validity (Wallace et al. 1992).

These recommendations that the assessments used should be relevant, easily understandable and not overly demanding must be observed if the responses given are to be considered with any confidence. To achieve this, some adaptation may be required. Peat et al. (2002) suggested that where questions were found to be unnecessary, they should be discarded; if they were difficult or ambiguous, they should be re-worded.

The use of specific assessment measures is now discussed. Regardless of whether pain is acute or chronic, the measures used for its assessment are the same. The most commonly used assessment tool is the McGill Pain Questionnaire (MPQ), originally developed by Melzack in 1975. There are two versions, a long and a short form, the latter developed in 1987 for situations where a more rapid appraisal is needed. There are consistently high and significant correlations between the two forms and both are regarded as being reliable (Melzack, 1987). The short form includes a pain descriptor scale and two present pain indices, a VDS³³ and a VAS³⁴, and has been used for the assessment of pain in older population groups. The VDS consists of words and phrases such as 'moderate pain' or 'severe pain' to denote pain intensity. The VAS consists of a 100mm horizontal line with 'no pain' marked at one end and 'worst possible pain' at the other. Participants are asked to mark the position that illustrates their current level of pain. It is scored by measuring the distance

³³ VDS: Verbal Descriptor Scale

³⁴ VAS: Visual Analogue Scale

from one end of scale to the participant's mark on the line.

One of the advantages of the VAS is its simplicity. A single line avoids any clustering of scores around a preferred numeric value and leads to less bias or influence than when words or numbers are included (Hawker et al. 2011). However, to complete it accurately requires reasonable cognitive function due to the level of abstract thinking required (Williams and Thorn, 1989). Its possible advantages may therefore be tempered by cognitive impairment (MacDonald and Mitchell, 2003) and may lead to a greater number of incorrect responses (Gagliese and Melzack, 1997).

An alternative scale using both words and numbers may be more suitable for some participants and could increase the sensitivity of pain detection. The Iowa pain thermometer (IPT) falls into this category. It combines an image of a thermometer with numbers from zero to ten and phrases that describe the level of pain. It therefore accommodates both the VDS and the VAS. It has been judged as the best measurement of pain intensity (Herr et al. 2007) and has been used effectively by older adults with cognitive impairment (Quinlan Colwell, 2012). It is shown below:



FIGURE 4:1 IOWA PAIN THERMOMETER

The assessment of depression and anxiety has led to a wide range of tools being used. In a Cochrane review, Maratos et al. (2008) reported the use of several different scales to assess depression: the Beck Depression Inventory (BDI), the Geriatric Depression Scale (GDS), the Hamilton Rating Scale for Depression (HRSD) and the Schedule of Affective Disorders and Schizophrenia (SADS). Other commonly used measures are the Centre for Epidemiologic Studies Depression Scale (CESD-10) scale, the Zung Self-Rating Depression Scale (SDS) and the Patient Health Questionnaire (PHQ-9) scale. These seven scales differ in content, the number of items, the response required (a yes/no answer or a four-point Likert scale) and in whether they are self-report. They all comprise a mixture of questions regarding feelings and behaviours and most require some recollection of the individual's emotional state (Steptoe et al. 2011). For example, both the CESD-10 and the GDS ask participants to recollect depressive feelings and behaviours over the past week (Radloff 1977); the PHQ-9 enquires about the past two weeks; the Bradburn Affect Balance Scale

enquires about the past few weeks and the Positive and Negative Affect Schedule (PANAS) uses various time frames from the present moment to the past few weeks (Watson et al. 1988).

Of those studies involving older people, Guétin et al. (2009), Chan et al. (2009) and Hanser and Thompson (1994) used the GDS, one of the most popular tools in clinical settings (Chan et al., 2009). Hanser and Thompson (1994) used the BDI as well as the Brief Symptom inventory (BSI) and the Self-Esteem inventory (SEI); Janata (2012) used the Cornell Scale of Depression (CSDD) and Guétin et al. (2009) used the HRSD.

These studies provide little insight into the reasons for the choice of a particular scale of measurement or whether there were any difficulties experienced during the course of the data collection, such as a refusal or reluctance to answer certain questions.

Hanser and Thompson (1994), in their use of several assessment scales, ensured a wide-ranging evaluation. One scale was completed weekly and the remainder every four weeks with the participants able to complete the scales themselves (ages ranged from 61 to 86). However, for many older people, this level of questioning would be too demanding. No other studies give details of how the assessments are carried out.

The assessment of anxiety is also measured in a variety of ways. In a review of studies that have investigated the effect of music on anxiety, Nillson (2008) selected 24 studies for inclusion. The most common tool used to measure anxiety was the STAI-Y, which was used in 19 of the studies. Of the studies involving the older population, Hanser and Thompson (1994) used the Profile of Mood States (POMS) and Cooke et al. (2010) used the Rating Anxiety in Dementia scale (RAID) an assessment scale that assesses 18 symptoms with a three-point Likert scale (Shankar et al. 1999). Again, no mention was made of the success or otherwise of the process.

Assessment scales used for the measurement of the three dependent variables in the relevant

studies show a degree of heterogeneity that makes comparison impossible. Although it is probable that researchers investigated all the options before choosing the assessment scale, it would be helpful for future research to know the reasons for the selections made as well as their suitability for the population.

4.1.2.3 Duration of music intervention

As well as a wide selection of assessment measures, research studies have used various different time periods for the delivery of a music intervention. The studies reviewed in the Cochrane report into the effects of music on depression, carried out by Maratos et al. (2008), demonstrated a remarkable degree of heterogeneity. Individual sessions ranged from 30 to 90 minutes; the number of weekly sessions ranged from one to six and the total number of sessions from 8 to 48. In the studies that related solely to older people, the period of music listening ranged from a one-off intervention of 20 minutes for the purpose of relieving pain (Schorr, 1993), to a weekly session carried out over a 16-week period for the purpose of reducing anxiety. Although the 20-minute intervention resulted in a positive effect, Schorr (1993) comments that this timeframe 'is likely not sufficient to engender a transformation'. Whatever the research's aims, different researchers have used very different timeframes to explore music's effect. It is not possible to say, on the basis of past studies, if there is an optimum daily or weekly timeframe for a music intervention. However, Maratos et al. (2008), in their conclusions to the Cochrane review, state that the average time for the reduction of depression to show significance is between two and three weeks and Nillson (2009) recommends a daily minimum of a 30-minute listening period. Bearing in mind the characteristics of the older population, consideration should also be given to the level of research burden imposed.

4.1.2.4 Music selection and delivery

The importance of the selection of music used in an intervention has already been discussed at

some length in Chapter Three. As quoted on page 57, 'careful screening of participants in terms of their music preferences should be mandatory' (Kreutz et al. 2008; 119). To illustrate what may occur when this is not carried out, Silvestrini et al. (2011) observed that if people listen to what they regard as unpleasant music, emotions such as anxiety, anger or disgust will be elicited rather than the ones that may lead to enhanced wellbeing.

In studies where participant-selected music is used, some researchers have devised questionnaires to identify the most suitable music for the individual. For example, Rentfrow and Gosling (2003) devised a questionnaire known as the Short Test of Music Preferences (STOMP). It is a 14-item scale used to identify favoured musical genres through the use of a seven-point Likert scale. Given the difficulties already noted for the use of Likert scales of this range, it is unlikely to be suitable for this population. Gerdner et al. (2000) developed another questionnaire: The Assessment of Personal Music Preference (APMP). This includes a range of questions relating to the respondent's past experience of music, his/her judgment as to its importance to them, as well as preferred and non-preferred genres and performers. It is suitable for use with cognitively able participants, but for those with more severe memory loss, there may be difficulties in recalling specific music. In these cases, they have developed an alternative version suitable for family assessment.

In their survey of the effects of music listening on chronic pain, Mitchell et al. (2007) used a music listening questionnaire to assess music listening patterns. This included questions on the frequency of respondents' music listening and the relative importance of music to them.

Studies involving the older population have used various methods for the selection of music. Those referred to below are examples of researcher-selected music as well as some examples of preferred music.

Schorr (1993), in a quasi-experimental study on the use of music on pain perception, requested that participants provide a cassette tape of their favourite music for a one-off session of music listening.

If this were not possible, she provided a tape of their favoured genre.

McCaffrey and Freeman (2003) explored the use of music on pain perception in those suffering from chronic osteoarthritis. They selected three well known pieces by Mozart for a daily 20-minute listening period over a two-week period. The tempo of each piece was between 60 and 80 beats per minute, a speed often recommended for the purpose of relaxation (Ortiz, 1998). It is possible that the pieces were familiar to the participants although this was not reported.

Chan et al. (2009) offered a selection of four genres of music to the participants: Western classical, Western jazz, Chinese classical and Asian classical. Specific pieces were ascribed to each genre. For example, those who chose Western classical listened to Beethoven's 5th Symphony for 30 minutes, once a week over four weeks. With this narrow range of preference, it could not be predicted that participants would appreciate the music selected for them.

Nilsson (2008) recommended that participants make their own selection with some guidance. This was the procedure adopted by Hanser and Thompson (1994) in a study on music's effect on depression. A registered and board-certified music therapist assisted participants to determine their music preferences, in particular the music that evoked positive associations or meaningful memories. The therapist then observed whether these choices had a relaxing effect on the individuals. If this were the case, other music of a similar style was added to the individual's programme. Although a time-consuming procedure, it ensured a high degree of preference and compliance with the intervention. However, this procedure would not be practical in a larger sample.

For Guétin et al. (2009), the establishment of music preference was also important. Participants were asked to provide details of their preferred and familiar music. A record publishing company, Music Care, then selected sequences of the chosen music with the aim of providing a maximum level of relaxation over a 20-minute period.

These five studies all used different approaches for the selection of the music. It was either a participant-selected genre, well known (and possibly familiar) music selected by the researchers, or highly personalised. As the interventions ranged in length from a one-off session to 24 weeks, it is not possible to compare the efficacy of the different approaches.

There is often little information given as to the method used for eliciting participants' preferences. For example, although Guétin et al. (2009) stated that 'music was chosen based on the patients' personal tastes following an interview/questionnaire', no further information was given, other than that participants had a choice of genre: classical, jazz, world music or 'other' (for example, New Age music) and a selection of five different instruments. More information would be helpful for guiding future research. Similarly, Siedliecki and Good (2006), although their study compared the benefits of preferred and relaxing music, gave no information as to how they determined preference.

Some researchers have also paid attention to the environment and the mode of delivery. For example, Guétin et al. (2009) offered headphones and masks to ensure concentration and requested that participants be seated comfortably. Janata, (2012), in order to avoid technological difficulties, had the music streamed into participants' rooms. Although this method had the very real advantage of avoiding technological malfunctions, it was dependent on the participants being in the right place at the right time. Other studies provided no details.

Although many researchers consider it important to provide music in line with participants' preferences, there is, as yet, no agreement on the degree of preference necessary to achieve the most beneficial effect. However, it is likely that the more detail provided will result in a more suitable music selection, which in turn, may engender a greater response. This is the approach recommended by Gerdner et al. (2000) and Mitchell et al. (2007).

4.1.2.5 Administration of assessment measures

Very few of the care home population have the cognitive, manual or visual capacity to complete standard assessment measures. These therefore have to be carried out through individual interviews. There are a number of consequences of taking this approach.

In an assessment of pain, depression and anxiety it may be the case that there are some questions that participants regard as being inappropriate. As Wallace et al. (1992) observe, questions that are appropriate when asked by a doctor in a clinical setting are not necessarily suitable when the interviewer is not a health professional and when the interview takes place in the participant's own surroundings. In this situation, a participant may feel more at liberty to refuse to answer certain questions.

Given the dependent variables to be assessed, the focus will be on negative subjects. For those affected by pain or poor emotional health the conversation may be distressing and may induce greater anxiety, the very condition that the intervention is designed to reduce.

There is a risk of bias in an interview, and strategies to reduce it should be considered. These include speaking clearly, repeating rather than re-wording an item if misunderstood and avoiding leading questions. Bias is impossible to avoid completely and the risk is greater if the researcher is not blinded to the allocation status of the participants (Maratos et al. 2008).

4.1.2.6 Adherence

A further challenge is that of ensuring adherence to the intervention. In the care home population, this may be compromised by forgetfulness, illness, fatigue or an inability to operate the music players.

The study carried out by McCaffrey and Freeman (2003) had several strengths in ensuring

adherence to the intervention, which was a daily listening period of 20 minutes over a two-week period. Participants were given specific instructions in order to comply with the intervention: they had to listen at a particular time of day and to keep a record of their adherence in a journal. In order to avoid any interference with the regular listening due to technological malfunctions, each participant was provided with the researcher's telephone number. These instructions ensured good adherence. However, the sample in this study was made up of independent older people living in the community with an average age of 76. The participants were all able to fulfil the demands made of them, including the self-completion of the assessment measures. This is unlikely to be the case within the care home population.

Chan et al. (2009) carried out research into a similar population. Participants were community-based older adults over the age of 60. Unlike the study referred to above, there was no method to ensure adherence to the programme. This was recognised by the authors as being a weakness of the study although possible reasons for it were not given. However, many of the participants were over the age of 80 and thus may have been functionally impaired in some way.

4.1.2.7 Attrition

Attrition is inevitable. It poses a significant problem in randomised control trials and has been called the 'Achilles heel of randomised experiments' (Shadish et al.1998: 3). Its effects are of considerable importance due to the reduced statistical power of a smaller sample size. It can also compromise external validity by reducing the representativeness of the sample (Bradt, 2012).

There are a number of reasons for attrition. Participants may withdraw because of a low expectancy that music will help them; there may be difficulty adhering to the intervention because of a decrease in health; some may die; some may withdraw due to disappointment at being randomised into the control group. The latter can result in unbalanced groups and reduce the study's internal validity (Friedberg et al. 2010).

An expected attrition rate for the general population may be estimated at 10% (Cooke et al., 2010). However, in research with older people, it may be over 20% (Bowsher et al. 1993). According to Beekman et al. (2002b), the two strongest predictors of attrition are living in an institution and cognitive impairment. It is therefore to be expected that there will be a high level of attrition in the care home population.

Reasons for agreeing to take part in research may include the opportunity to be useful and for increased social interaction. If the time demanded of them is excessive, or if questions are asked that they are not able or do not wish to answer, participants may withdraw. To offset this, Tinker (2012) recommends that participants be given clear explanations of what will be asked of them and whenever possible, to be given feedback.

4.1.2.8 Placebo effect

The placebo effect refers to the 'ability of an inert or benign substance to cure or to bring about healing, due to the person's belief or expectation that it will be effective' (Hanser, 2010). There are a number of situations that might induce a placebo effect in research of this nature. For example, it might be caused by verbal suggestions from the interviewer that listening to their preferred music could bring about some pain relief. It might be caused by the 'warmth, friendliness, interest, sympathy, empathy, prestige and positive attitude' of the interviewer (Turner et al. 1994). It might also be caused by a participant's positive attitude towards the therapeutic intervention. And it might be the case that the expectation of pain relief could reduce the accompanying anxiety, which in turn could ameliorate the experience of pain (Turner et al. 1994).

In pharmacological trials, it is common practice to include a placebo treatment group when conducting a randomised control trial. This is achieved by providing substances identical in appearance to the active drug being tested so that the psychologically produced effects of the treatment can be controlled for (Bradt, 2012). This cannot be done in the case of a music

intervention as it is not possible to provide an alternative treatment that is as credible as the music intervention. However, using a control group that then switches over with an experimental group allows for an assessment of the three dependent variables both with and without the music intervention. This design therefore allows for an investigation of the extent to which expectancy affects results (Bradt, 2012).

4.1.2.9 Summary

The challenge of this research is considerable: the choice of methodology, the difficulties of recruitment, the adaptations required for the older population, the mode of music delivery, the likelihood of attrition; all these and more present sizeable obstacles to the reliable outcome of a research study.

4.1.3 Research design and methodology

To design an intervention that addresses all the criticisms of past research studies, as well as tackling the constraints posed by the care home population may be beyond the reach of any but the most well funded and supported research studies. However, even within the scope of a study that has no funding or extra support, it is hoped that some progress can be made in addressing some of the issues raised. These include sample size, the use of randomisation, the careful choice and administration of assessment measures, and the selection and delivery of the music.

4.1.4 The overall research design

As discussed on page 84, a mixed-methods approach was adopted for the design of this study: both quantitative and qualitative methods were used to answer the research questions. The principal research questions regarding the effect that listening to music has on pain, depression and anxiety were investigated by means of a randomised control trial. This is referred to as Study One.

The question regarding the different factors that determine the range of response to music was investigated through thematic analysis. This is referred to as Study Two. Data for both studies were collected concurrently.

4.1.5 Summary of the methodology

Following the recruitment of 117 participants from the care home population, they were randomised into two groups: the experimental group (Group One) who listened to preferred music, and the control group (Group Two), who maintained their usual routine. The independent variable was a daily music-listening programme of 30 minutes duration, carried out over three weeks. The three dependent variables were pain, depression and anxiety. At the end of the three-week intervention, Groups One and Two were switched and the process was repeated. This is illustrated in Fig. 4.2 below.

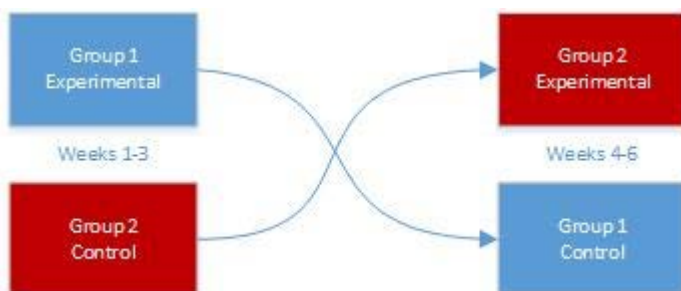


FIGURE 4:2 THE SWITCHING OF GROUPS 1 AND 2.

Quantitative and qualitative data were obtained through the use of semi-structured interviews that incorporated assessments of each of the three dependent variables. These were carried out once a week over a six-week period; each participant was therefore assessed once weekly during both the experimental and control conditions.

Additional data on participant's pain and mood were obtained from care staff questionnaires.

4.1.6 Ethical considerations

According to Robb et al. (2011), music-based interventions in health care are usually regarded as being of low risk to people of every age including older people. However, research with older people gives rise to particular ethical issues due to possible cognitive or functional limitations. Four main issues arose from this study: informed consent, care and consideration of the individual, participant anonymity and confidentiality.

Each participant was given a consent form to sign his/her agreement to take part in the research (Appendix H). The form explained the procedure of the study and itemised the two different areas requiring their consent: participation in the intervention and the willingness to be recorded.

Participants were given information of their right to withdraw at any time, even retrospectively; they were assured that all data collected would be anonymised and that there would be no deception.

They were provided with my contact details and those of my supervisor for any questions or problems that might arise at any stage of the intervention.

At the conclusion of the research, participants were provided with a debriefing letter giving details of the storage and anonymity of the data and information about the dissemination of the findings.

A small number of participants were unable to provide consent themselves and in those cases a family member or carer gave it on their behalf.

Anonymity was important to all participants. Secure storage of all data collected, whether hard or electronic copies or recordings, was guaranteed. Information stored on a computer was password protected. Hard copies were stored in a locked cupboard. Pseudonyms were given to all participants. Confidentiality was also assured with no discussion or divulgence of any information passed on to other parties. There were no situations where deteriorating health required confidentiality to be breached.

During the interviews, every effort was made to ensure an informal and non-threatening environment. Participants were told that they could decline to answer any of the questions. Each interview concluded with some general questions of a positive nature in order to divert attention from the negative topics of pain, depression and anxiety. If there were any negative reactions to a piece of music, the music was deleted from their programme.

At the end of the study, a debriefing session enabled participants to talk about their experience of participating in the research. This was in order to lessen any sense of dependency that any of the participants might have developed during the research period.

4.2 Pilot studies

In order to examine the feasibility of the chosen methodology with this population group, and to identify any necessary modifications, it was decided to conduct a series of pilot studies. Given the difficulties already discussed in procuring participants, it was anticipated that the samples used would be small; the studies would not, therefore, be suitable for trialling methods of randomisation. They did, however, provide an opportunity to trial the assessment of music preference, the assessment of the three dependent variables, pain, depression and anxiety and the duration and delivery of the chosen music.

Three pilot studies were conducted. This allowed for ongoing modifications to be made both to the assessment measures and any issues associated with the delivery of the music. In order to avoid recruiting participants who might be able to take part in the main study, alternative communities of older people were approached. They shared many of the characteristics of the care home population, such as their age and a need for some support with activities of daily living. The first involved participants living in sheltered accommodation; the second involved service users at a day care centre; the third involved some residents of a small residential care home.

Prior to the commencement of these pilot studies, the assessment measures for each of the dependent variables were selected. In addition, the assessment measure of music preference, the duration period for the music intervention and the medium of delivery of the music were chosen.

As discussed, the MPQ has been used successfully in a wide range of studies for the assessment of pain, including with an older population. The purpose of the assessment was to determine the presence of pain and its intensity, and to enable any changes during the period of the intervention to be recorded. In common with other studies, different sections of the MPQ were selected. To establish the presence of pain, a diagram of the human body was used to pinpoint its location/s; the VDS was used to evaluate the level of pain (from 'just noticeable' to 'excruciating'); the VAS was used to measure current pain intensity. Despite the questions surrounding the latter's suitability for this population, it was decided to trial it in this study, taking into account the recommendations that have been made for its use with older people. For example, Gueldner and Manner (1989) suggested that a vertical, rather than a horizontal line be used, as they considered this to be more suitable for those struggling with abstract thought; Herr and Mobily (1993) suggested that it should be presented with a sufficiently large font size. Further questions were included regarding the effect that pain may have on mood, sleep, enjoyment of life, ability to concentrate, relationships and appetite.

For the assessment of depression and anxiety, there are several scales that have been used. In addition to the requirement for the selected scales to be suitable for the older population, there were other factors to consider. The scale had to be administered by a non-medically trained interviewer; not all measures allow for this. The scale also had to be suitable for the measurement of change over a period of time, not solely the level of depression experienced. The following fulfilled the necessary criteria: The Geriatric Depression Scale (GDS), the Hospital Anxiety Depression scale (HADS), the Beck Depression Inventory (BDI), the Zung Self-Rating Depression Scale (SDS) and the State-Trait Anxiety Inventory (STAI-Y).

Of the five studies that met the inclusion criteria for the Cochrane review carried out by Maratos et al. (2008), only one had a similar population. This was a study by Zerhusen et al. (1995) whose population of care home residents ranged in age from 70 to 82. This study used the BDI. It was created to measure the severity of depression using a 21-question multiple-choice self-report inventory and was designed for adults aged 17-80. It is used widely and covers both depressive symptoms and physical symptoms (Maratos et al. 2008).

The GDS was created by Yesavage et al. (1983) and was used in two other studies with a slightly wider age range of 60 to 85. This was designed specifically to identify depression in older populations and consists of 30 items. Again it is a self-report measure with yes/no answers and is commonly used as part of a geriatric assessment. It has well established reliability and validity (Maratos et al. 2008). A short form was devised by Sheikh and Yesavage in 1986.

Given that these two scales, the BDI and the GDS, were included in the Cochrane review, they needed careful consideration.

When evaluating the BDI, it was thought that the lack of opportunity given for any positive emotional report would make it unsuitable for those not suffering from depressive symptoms. Subjects covered include sadness, pessimism, past failure, guilt, self-dislike and suicidal thoughts. Talking about these subjects orally would be difficult for the majority of participants; if they were embarrassed or forced to focus unduly on negative matters, the likelihood of attrition will be greater. It is better suited to the evaluation of the severity of depression, rather than its incidence.

The GDS is different in style: simpler questions with yes or no responses. Five of the 15 questions are phrased positively. However, the limited choice of response makes the measurement of change unlikely over a short period of time. For example, the question, 'have you dropped many of your activities and interest?' is unlikely to change over a three-week period.

Other studies considered raised similar questions. For example, the SDS includes items that make it unsuitable for oral delivery. Few respondents would be prepared to answer questions on their digestive difficulties or enjoyment of sex. In addition, repeated weekly assessments of many of the items would be unlikely to show change; for example, 'Morning is when I feel the best'.

The measure that seemed most suitable and the one selected for Pilot Study One was the HADS. This was originally developed by Zigmond and Snaith (1983), covers both depression and anxiety, and is commonly used by doctors in both hospital and community settings. It consists of 13 statements, and responses are assessed using a four-point Likert scale: most of the time, a lot of the time, time to time, not at all. This allows for the demonstration of more subtle changes than is possible with the dichotomous answers of the GDS. By avoiding a mid-range option, it also forces participants to make either a positive or a negative response. It was thought that the more general subjects covered such as feeling tense or having worrying thoughts would be more suitable for an interview situation.

The questionnaire for the selection of music was adapted from the APMP (The Assessment of Personal Music Preference) devised by Gerdner et al. (2000), and the survey conducted by Mitchell et al. (2007). It includes questions relating to participants' current listening habits, musical background and their rating of music's importance to them, as well as questions about their preferred genres, composers and performers (Appendix A).

A three-week period was chosen as a suitable length of time for the duration of the music intervention. This was the period recommended by Maratos et al. (2008). It was anticipated that this timeframe was long enough for participants to accustom themselves to the procedure of the study and for some benefits to be assessed, but not too long before tedium or impatience led to withdrawal.

It was not known whether participants would have suitable equipment for listening to music. A

simple CD player was selected for those without a music player: Groove-e GVPS713BK Boombox Portable CD player with radio. This was chosen for its low cost and ease of use and was purchased from Amazon.

The description of each pilot study contains information and quotations from each participant. To protect their identities, all participants have been given a pseudonym.

4.2.1 Pilot study one

In October 2011, the process of recruiting participants to take part in the pilot studies began. Through the services of the chief officer at Age UK in the borough of Kensington and Chelsea, the charity agreed to identify a number of older people living in the area who had some form of care support and sufficient cognitive ability to take part. Nineteen people fitting this criterion were identified. They each received a letter from the local Age UK office, giving a brief description of the project and the assurance of their support and endorsement. Enclosed with the letter was a more detailed explanation of the research and an invitation to take part from me. By February 2012 there had been no response and a further set of letters was sent out to the same participants. By the end of the month five acceptances and four refusals had been received, a positive response rate of 26%. Those who accepted were then contacted and a meeting arranged in order to explain the procedure more fully, answer any questions and confirm their willingness to take part. Each signed a participant consent form, detailing their acceptance of the procedure, including their willingness for all interviews to be recorded.

The ages of the participants ranged from 69 to 83, with a mean age of 74, four male and one female. Pseudonyms were provided in order to ensure anonymity. The relevant data are shown in Table 4.1 below.

Name	Age	Housing	Marital status	Children	Ethnicity	Education	Job	Health
David	74	Sheltered	Single	No	White British	Left school 16	Clerk	Arthritis
Andrew	72	Sheltered	Divorced	Yes	Black British	Left school 18	Administrator	No issues
Robert	69	Home with care	Living as married	Yes	White British	Higher education	Interior designer	Stroke Depression
Peter	71	Home with care	Married	Yes	White British	Higher education	Graphic designer	Parkinson's disease
Mary	83	Sheltered	Widow	No	White British	Higher education	Housewife	Depression Arthritis

TABLE 4:1 DEMOGRAPHIC DATA OF PARTICIPANTS IN PILOT STUDY ONE

Each participant had access to some level of care. Two had high care needs; four had restricted mobility and suffered from varying degrees of pain; two had experienced mental health problems in the past.

A first interview, lasting for an average of 30 minutes, elicited demographic data (age, gender, marital status, ethnicity, education and former occupation) as well as information regarding their musical background and preferences. The latter informed the selection of an individual music programme as discussed under 4.2.4 of this chapter and under 3.2.3 in Chapter Three. These were made in advance of the second interview. The range of music preferences expressed ranged from musicals to popular music from the 1950s, hymns, classical, jazz and rock and roll. Four of the five

participants requested the use of a CD player.

The second interview consisted of a baseline assessment of pain, depression and anxiety using the selected assessment measures. As an explanation of the procedure, each participant was told that the same questions relating to pain and mood were asked of everyone taking part and that there were no right or wrong answers.

The prepared CDs, each with approximately 90 minutes of music, and an accompanying playlist were then given to each participant. Clear instructions were provided regarding the use of the player and participants were asked to listen for a minimum of 30 minutes each day.

The same assessment was made once a week until the three-week intervention was completed. Each interview was recorded using the 'QuickVoice' app on an iPhone and then downloaded to my password-protected computer. The recordings ensured an accurate record of each interview. Observations of mood and environment were noted whilst making the assessments.

4.2.1.1 Findings from pilot study one

The principal aims of this study were to trial the assessment measures for their suitability to this population, to determine if the length of intervention was adequate and to explore any issues arising from the delivery of the music. No analysis of the quantitative data was carried out due to the small number of participants.

Some of the issues raised earlier in this chapter (4.2) regarding the challenges of research with older people were reflected in this study. These and other findings are discussed below.

The assessment of participants' music preferences was designed to provide sufficient detail so that an individual programme could be constructed according to each of their choices. Although there was a range of responses, all the participants were able to answer questions about their favoured

genres and composers; some were also able to list specific songs, pieces and performers. Although the selection of music was made by the participants as far as was possible, the order, choice of moods and tempi were researcher-selected. It was decided that no change was required for the assessment of music preference.

The assessment of pain was not as straightforward. There was some reluctance to either admit to pain or to discuss it. For example, David's facial expressions and movements suggested that he was in considerable pain. When walking, he was slow and stiff in his movements. However, he would only admit to a little arthritis in one knee. Robert acknowledged no pain at all during the first two weeks but the following week admitted that he experienced considerable pain on a daily basis. When initially asked about her experience of pain, Mary said, 'I don't really have any pain'. Later, she admitted, 'I do at night sometimes my joints hurt'. This reticence to report pain was noted by Herr and Garand (2001) who observe that 'failure to report pain must not be interpreted as absence of pain.' They suggest that the under-reporting of pain is due to not wanting to be a nuisance or from fearing the consequences of admitting to it. However, neither of those reasons appeared to be the case in these situations. Quinlan-Colwell's (2012) observation that older adults use the word 'pain' only for excruciating experiences may have been a factor. Alternative words such as 'discomfort', 'ache' or 'sore' were therefore incorporated into the questionnaire as a possible way of eliciting a more honest response. However, it may also be the case that some older people do not wish to discuss their health with someone who is not a medical practitioner.

To facilitate discussion of the presence of pain, questions were asked relating to the effect that pain had on their lives. For example, participants were asked, 'Are there any activities that you can't do because of pain?' This was not altogether helpful. For example, David responded by saying that he could no longer play football or run for the bus. The focus on the things that he could no longer do was unduly negative.

When pain was acknowledged, the assessment measures worked well. The diagram of the body to

select the location of the pain was helpful and there were no difficulties in completing the VDS and the VAS.

There was some difficulty with the assessment of depression and anxiety. In some cases the answer was 'I don't know', or, 'No, I don't think so'. This was not due to any lack of understanding, but either to embarrassment as to the nature of the question or to a difficulty in choosing the most accurate response on the Likert scale. None appeared to have taken part in this kind of questioning before and were unused to talking openly about their moods.

One participant responded to an item which, whilst accurate, demonstrated some of the problems of research of this kind. To the statement, 'I get sudden feelings of panic', David answered that he did. He explained that this was in anticipation of going out, his fear of falling or getting lost. However, in the third assessment he responded that he did not. This was not due to any lessening of his feelings of panic, but due to the fact that he had been feeling low and had not made the effort to go out. The data therefore showed a false improvement in his condition.

A further issue was the fact that the individual scores demonstrated little change over the three weeks. The responses did not always reflect the reality of each participant's situation. For example, when Robert reported that listening to the music had improved his mood, there was no corresponding improvement registered through the answers to the questionnaire. During the last interview, David said that he felt 'low' but again this was not reflected through the assessment measure. In some cases, this may have stemmed from a desire to answer questions positively or to present himself in a good light. It may also have been due to the fact that some items were unlikely to show weekly changes. For example, responses to the statements, 'I still enjoy the things I used to enjoy,' and 'I feel as if I have slowed down,' were unlikely to register change from week to week. Although the scale has some items that may register a weekly change (e.g. 'I feel cheerful' and 'I feel tense'), overall the scale is better used as a diagnostic tool, rather than one that elicits subtle changes in mood over time.

Adherence to the listening programme was good with each of the participants listening regularly. For Mary it became a routine: 'I have been listening to the music very much, all the time in fact. It's been lovely. I listen in the mornings usually at breakfast time and I put your CDs on in the evening and I relax in my chair and listen.' Peter was highly motivated to listen to the music, as he was interested in the effect that it might have on his ability to cope with Parkinson's. When he went away for a few days without the CD player, he listened to Classic FM instead. David spoke each week about the music that he had particularly enjoyed. Andrew talked of the renewed interest that he had in the music and how he was listening every evening. Robert, despite having stopped listening to music because he found it 'really intense', engaged with the programme and with the encouragement of his partner listened very intently. However, it was impossible to determine if participants listened for the prescribed 30 minutes.

No comments were made regarding the duration of the music intervention. It was hoped that with more sensitive assessment measures the three-week period would be of sufficient length to demonstrate change if it occurred. Participants did not show any sign of fatigue or apathy.

As a general observation, there was some nervousness at the start of the study. This lessened during the three weeks and led to a greater openness of response. This was identified as being an issue for the main study. A more truthful appraisal of health towards the end of the study may lead to a reported increase in the incidence of pain, depression and anxiety.

Once nervousness had abated, it was noted that the weekly interviews provided an antidote to the isolation that they all experienced. This had a positive effect on mood. Mary commented, 'I feel better because you are here'; when on her own she sank 'into the depths'. This is a probable consequence in any group, particularly one that involves older, vulnerable people and demonstrates the importance of conducting a randomised control trial.

None of the participants encountered any difficulties in operating the CD player. David reported that

the volume varied between the different tracks; he found that having to make constant adjustments to the volume was annoying. This was resolved prior to the following study.

A benefit of the semi-structured interview is the opportunity that it gives for the participants to expand on their answers and to give some insight into the reasons for the answers that they give. In this study, the qualitative data provided were useful for providing a greater understanding of the lives of the participants as well as their responses to the music programme. Both the notes taken during the interviews and the recordings made were carefully scrutinised for common themes. (In the case of Robert, it was not possible to decipher the interviews; the stroke had badly affected his voice). These were put in a tabulated format that recorded the prevalence of reference, any similarities or differences and the apparent importance to the individual participant. Two principal themes were identified as being pertinent to four out of the five participants and relevant to the study. Andrew, as already discussed, was resolutely positive and gave little additional information. He differed from the other participants by virtue of his physical independence and apparent lack of vulnerability.

Two themes were identified as being illustrative of the issues experienced in this group: loneliness and fear. Loneliness was a constant presence in their lives. Loss of mobility was the primary cause in each case. Both David and Mary lived alone and were virtually housebound. As a result of a stroke three years earlier, Robert was confined to a wheelchair, had limited upper body movement, and his ability to communicate was poor. Although cared for by his partner and therefore not alone, his condition restricted his ability to interact with others; friends and acquaintances were either too embarrassed or impatient to engage him in conversation. Furthermore, his accommodation was ill suited to a wheelchair user with several flights of stairs; opportunities to go out were therefore few. Peter, who was looked after by his wife, suffered from Parkinson's disease and suffered frequent falls. This limited the scope of his activities.

For David and Mary, pain was the primary cause of their isolation. Mary said, 'Walking is the main

thing that I can't do. I can't get about', and 'When I walk, you see, I can't walk very far. When I walk, my back hurts – that's if I go out at all'. On another occasion, she said, 'I just withdraw into myself and become a vegetable really'. David found the effort too much: 'I can't be bothered to go out'.

The second theme was fear. David, Mary and Peter all feared going out because of the risk of falling. For David there was the added fear of getting lost. They expressed it in the following ways: 'I get a fear of going out of the house sometimes, about leaving the house'; 'I've got fears about going out with the pain in my back'; 'I dread falling'; 'I get a feeling of panic if I don't know where I am'. For Peter, falling was a regular occurrence; he fell about twice a week.

There were other fears. David spoke of the fear that kept him awake at night. Robert spoke of an 'uncontrollable fear'. Mary was beset by fear. She feared pain; she feared death; she feared the future: 'I don't look forward to things because I have these awful fears,' and 'at night, my brain goes round and round in circles thinking about things, mainly about money worries, and then I get depressed, very depressed, and it's then that I can't sleep. It's more worry than pain that keeps me awake at night'. She also spoke of a fear that something terrible might happen.

These two themes of fear and loneliness were a constant presence in these four people's lives and may be a hallmark of vulnerable older people living semi-independently. As was discussed in Chapter Two, loneliness is a fact of life for those with poor health aged over 75 (De Jong Gierveld, 1998), and is associated with poor levels of wellbeing (Cacioppo et al. 2002). The care home population, with its opportunity for companionship and support, may have a lower incidence of both loneliness and fear.

The interdependence of pain, depression and loneliness, as discussed in the literature review of Chapter Two, was evident in this study. Pain appeared to be the catalyst for loneliness in the cases of David and Peter and this led to low mood levels. Robert experienced both pain and depression, which led to increasing isolation and loneliness.

Listening to music was beneficial to each of the participants in one way or another. They made frequent observations about the music enabling them to relax and improving their mood. David was a good example of this. He said that, 'It's been soothing and helped me to relax, it lifted my mood'. Mary made a similar comment, 'They're [the CDs] lovely, I've so relaxed with them. They have helped me greatly'. During one week she talked of music as being the only enjoyable thing in her life. Andrew talked of the relaxing effect of the music and how it helped him to concentrate. Only Robert talked of the music being a distraction from pain, commenting that 'music drives you away from yourself'. This may have been due to the fact that some of them only experienced pain with movement, not when they were sitting still and listening to the music, whilst for Robert, pain existed irrespective of whether he moved or not. Both Peter and Andrew experienced a physiological response whilst listening to their music. Peter talked of a tingling in the back of his neck and tears. Andrew told how 'tears just streamed down my face. It's like tears of joy'.

For Mary, music brought back memories. She had chosen 'Danny Boy', a favourite song of her husband's. It reminded her of him and his love of singing. She also loved the songs from some of the musicals because 'it reminds me of the shows'.

The comments that each participant made gave a strong indication that the music programme had been effective to some degree in improving mood levels. Prior to the study, none of the participants had been listening to music; Robert had equipment but had not wanted to use it; the others had no access to a music player. Each participant expressed a desire to continue to listen to music. For those without music players, this was not possible and it was therefore a disappointment to come to an end of the research period. This was an ethical issue that had not been anticipated. To mitigate any distress in the main study, it was noted that participants should be given regular reminders that the music players would be on loan for the duration of the study only.

4.2.1.2 Adaptations

The assessment of pain, although subject to some instances of non-disclosure, was satisfactory. There were no difficulties in the completion of either the VDS or the VAS scales and both were sensitive to changes.

In order to be better able to measure changes in mood over the period of the intervention, it was necessary to make some adaptations to the questionnaire. Although suitable for many other situations, the HADS scale contains too many items that either cannot show any weekly changes in anxiety or depression or that may embarrass the respondents when used face-to-face in an interview. For example, the statement 'I have lost interest in my appearance' was too personal. This had not been anticipated prior to the study. Additional questions about the effects of pain on concentration and memory were also omitted as these conditions are a general characteristic of the population and not necessarily indicative of a reaction to pain. As Peat et al. (2002) observed, the pilot study gives an opportunity to identify and discard unnecessary or unsuitable questions.

In the place of the HADS scale, two separate scales were selected for the measurement of anxiety and depression: the STAI-Y (for anxiety) and the CESD-10 (for depression); both were adapted. The STAI-Y is a validated 40-item self-report assessment device, originally constructed in 1964 and revised in 1983 (Spielberger et al. 1983). It is one of the most widely used scales and is recommended for the study of anxiety both in research and clinical settings. It is divided into two parts: 20 items allocated to state anxiety and 20 items allocated to trait anxiety. The former part consists of 20 statements related to current mood (asking respondents how they feel 'at this moment') and are each responded to with a four-point Likert scale. For example, to the statement, 'I feel calm', possible answers are, 'Not at all', 'a little', 'somewhat' and 'very much so'. Higher scores indicate greater levels of anxiety. This section of the scale was the one selected as it is more sensitive to change. To lessen respondent burden, the number of statements was reduced to six. Those omitted included, 'I feel comfortable' (most of them will not), 'I am jittery' (it is similar to

'nervous'), 'I feel pleasant' (again, most of them will not). As discussed on page 88 of this chapter, there are also items in this scale that are paraphrases of others. For example, 'I feel jittery' paraphrases 'I feel nervous'. These were also removed. As Wallace et al., (1992) observed, lengthy scales risk damaging interviewer/respondent rapport. Greater accuracy is likely to ensue if the relationship with participants is good and there will be less likelihood of withdrawal.

The CESD-10 scale was tested for reliability and validity among older adults, aged between 65 and 98 years (Andersen et al. 1994). It consists of ten items, again judged with a four-point Likert scale. The number of items was deduced to five.

Due to the ease with which participants used the VAS scale and the difficulties experienced with the Likert scale, it was decided to compare participants' responses to both measures: four statements would be answered with a VAS and four by a Likert scale. Responses to the Likert scale were simplified to: 'not at all', 'a little', 'quite a lot' and 'a lot'.

No changes were made to the demographic questions or to the assessment of music preference.

4.2.2 Pilot study two

The purpose of this second study was to further review the assessment measures of depression and anxiety and to identify any other issues relevant to the procedure. It was anticipated that different issues might emerge from another population group.

An opportunity arose to carry out some research at the Miranda Barry Day Care Centre in the Royal Borough of Kensington and Chelsea, which provided a suitable location to carry out the second pilot study. The centre's purpose is to provide care for people over the age of 65 who have complex needs. Service users must be referred to the centre by their social worker. The Centre has 50 service users; some come every day, others less often. The care manager identified seven as being

willing and able to take part.

The seven participants had a mean age of 78, ranging between 56 and 96. There were five females and two males. Although the official lower age for entry is 65, the 56-year-old had highly complex needs and the centre was considered to be the most suitable place for his care. Most of the participants had limited cognitive ability and there were two cases of dementia. One had severe sight loss and one had very poor speech. As before, pseudonyms were provided in order to ensure anonymity. The relevant demographic data are shown in Table 4.2 below:

Name	Age	Gender	Marital status	Ethnicity	Education	Job	Health
Jeremy	74	Male	Widower	Other white	Left school 16	Taxi driver	Arthritis
Martin	56	Male	Married	White British	Left school 16	singer	Stroke
Martha	72	Female	Married	White Irish	Unknown	Unknown	Dementia
Enid	79	Female	Divorced	White British	Left school 16	Book seller	Severe sight loss
Geraldine	83	Female	Widow	White British	Left school 16	Unknown	
Susan	84	Female	Married	White British	Left school 18	Unknown	Dementia
Barbara	96	Female	Widow	White British	Left school 18	Nurse	

TABLE 4:2 DEMOGRAPHIC DATA OF PARTICIPANTS IN PILOT STUDY TWO

The procedure for the study was identical to that of pilot study one. The collection of demographic data and assessment of music preferences was followed by three weeks of music listening with weekly assessments of pain, depression and anxiety.

4.2.2.1 Findings from pilot study two

There were some issues raised that were similar to those in the first study; others, however, were different. The central problem throughout the period of the study was the low consistency of attendance at the day centre. This was due to either ill health, hospital appointments or other unexplained absences. This is normal for a day care centre but affected adherence, assessment and attrition. It was my impression that the cognitive function of the participants in this study was in most cases lower than in Pilot Study One and this also had some effect on the validity of responses to the assessment measures.

The music preferences expressed by the participants were very similar to those of pilot study one and ranged in style from classical, to big band, rock and roll, musicals, pop and the music enjoyed in their youth. Some of the participants could be quite specific in their selection, despite severe memory loss. Susan, although having dementia and confused as to whether she was living in Jamaica or England, was able to specify particular genres, songs and performers. Martha was unable to remember her age, or whether she was married or not; neither did she know whether she possessed a radio or CD player. However, she knew the genres that she both liked and disliked and the style of pieces that she wanted. Most of the participants were able to provide sufficient information for the selection of music that was suitable for them. However, Barbara, aged 96 and cognitively alert, found it difficult to talk about her background or music preferences. She repeatedly said that it was all too long ago to remember and that she liked all music. It seemed that this tactic was to avoid her having to come to terms with the fact that she found it difficult to remember any specific music. This was noted as an issue that might occur in the main study. Due to the less specific music preferences given, greater researcher input was necessary for the compilation of the

music programmes.

As was the case in pilot study one, not all participants readily admitted to feeling pain. Jeremy and Enid were both prepared to talk about the pain that they experienced, but others were not. For example, Martin insisted each week that he was pain free, but one of the care staff told me that he experienced considerable pain on a regular basis and became very agitated. Susan also insisted that she had no pain, but found it hard to get up and looked uncomfortable. Rather than admitting to pain, Geraldine said instead that she was stiff from arthritis. The use of alternative words such as 'discomfort' and 'ache' were helpful in some cases but did not eliminate the issue of a lack of openness. Jeremy, although prepared to admit to pain, did not like to focus on it for long. He said, 'I try to forget.' As these difficulties of pain assessment were encountered in both studies and given that this behaviour was consistent with similar reports in the literature, it was expected to be an issue in the main study.

When pain was acknowledged, there were some difficulties in assessing its intensity. The participants' apparent lower cognitive ability affected their self-confidence and this in turn, affected their ability to use the VAS. After its successful use in pilot study one, this was unexpected, although previous studies have reported similar difficulties. It supports the view, upheld by Williams and Thorn (1989) that the abstract thought required makes it unsuitable for those with cognitive impairment. Amongst the larger numbers of participants in the main study, it was anticipated that there would be a range of cognitive ability, for which the measures used must be suitable. There were no problems with the VDS.

There were occasions when questions asking if the participant were anxious or lonely, for example, were responded to negatively. However, the demeanour of the participant would suggest otherwise. For example, Geraldine appeared very fearful and anxious but did not acknowledge it in the responses. This is something that is difficult to resolve and may be due to various causes. For example, she may have been concerned about giving 'wrong' answers or feared being perceived as

a flawed person; she may have wanted to present herself in a good light. My role as interviewer may also have affected her responses. Different interviewers may engender more trust and openness than others. A further reason may be particular to this generation. Many have lived through hard times, through The Second World War, rationing or other adversities and the greater stoicism this may have induced may account for their reluctance to be open about personal difficulties.

The adaptations made to the assessment of depression and anxiety were an improvement. Items were more relevant to their situation, less intrusive and did not cause embarrassment. The use of fewer items in each scale appeared to cater better to the participants.

Attrition is to be expected in research with older people, but this had not arisen in pilot study one. In this study, three out of the seven participants withdrew. Barbara had a fall. Susan stopped attending the centre and therefore her participation in the study came to an end. Geraldine was admitted to hospital and therefore unavailable for the remainder of the study period. Besides withdrawal, there were frequent absences. These were due to sickness, medical appointments or family visits. It was anticipated that there would be fewer weekly absences in care homes due to the residents living there full time.

As already discussed, the adherence to the music-listening programme in pilot study one was good. In this study, it was more of a challenge due to the irregular attendance of some of the participants. Reduced cognitive function affected their ability to operate the CD players and some participants did not remember to turn them on. When possible, care staff arranged for them to listen whilst in the Centre which ensured a limited level of adherence, although for some participants this was only on three days each week. Listening times were reduced further if there were unplanned absences. On one occasion following the three withdrawals, all four of the remaining participants said that they had been unable to listen to the music: Enid had been ill and had therefore not listened to the music at all; Jeremy had listened once during the previous week and neither Martha nor Martin could say

as they were unable to remember. Although adherence, according to the care staff, was more regular than admitted to by the participants, this was not an easy environment to carry out a study.

As in pilot study one, none of the participants had access to music in their own homes. However, the participants in this study differed in that none could work the CD player unaided. This was not anticipated, and raised questions as to how suitable the CD players would be for the care home population with the expected range of ability and function. This was therefore a matter of concern.

Another difference in this study was found in the length of the interviews. With the exception of Enid and Geraldine, participants struggled to communicate effectively with the result that very little qualitative data were collected. The analysis was carried out in the same way as in the previous study, but provided little further insight.

The one, almost universal theme to emerge was loneliness. Participants had the social contact of other service users during the hours spent in the day care centre, but lived alone. Jeremy, who was a widower, consistently said that he was very happy and had no problems, but the one thing that he admitted to each week was being lonely. Enid spoke of the loneliness that resulted from her severe sight loss. Of her evenings she said, 'I want to speak to someone and I'm fed up with what's on the TV and radio'. None of them had good mobility and all were therefore restricted in how independent they could be when at home. This exacerbated the feelings of loneliness.

As in pilot study one, none of the participants had access to music in their own homes. For some, this was more of a loss than for others. For Barbara, music was very important and care staff reported that she had a lovely singing voice. However, she rarely listened to music; she had no opportunity. Martin had played in a band in his youth and music had played a very important part in his life; but again, he had no access to music.

Despite the practical issues of ensuring regular adherence to the programme, all the participants

enjoyed listening to music and liked the fact that they each had their own personal music programme. Martin said, 'Music takes my mind off my problems; when you start to listen to music you don't think about anything.' Enid, who had considerable pain, said, 'It [music] does the trick – it distracts you from the pain. The music takes the pain away. It is relaxing and peaceful.' Martin, who had severe cognitive and physiological disabilities, demonstrated the most physical response to the music. Care staff reported that he joined in with the songs, tapped his fingers and wanted more. Importantly, whilst listening, he never asked to go to the bathroom; this was of great benefit to the care staff and suggests that the music acted as a distraction for him.

4.2.2.2 Adaptations

The principal difficulties of this study lay in the management of adherence to the protocol, the assessment of pain intensity and the use of technology. Although care home residents with dementia would not be included in the main study, it was recognised that, nevertheless, there would be a range of cognitive function in the sample and similar issues of adherence might arise. However, it was hoped that in the more regulated environment of a care home, there would be greater consistency of help from the care staff as well as fewer absences.

The difficulties experienced with the completion of the VAS indicated that further modification was needed. It was decided to use the IPT, described on page 92 of this chapter. Its advantage lies in the fact that it features words, numbers and colours; participants can use the medium to which they can relate most easily. In a study that evaluated the IPT and other pain intensity scales in both younger and older adults, the IPT was judged to be the best choice (Herr et al. 2007) with fewer failure rates than other scales. The authors recommended it for use with people of mild to moderate cognitive impairment, thus making it very suitable for this study.

The adaptations made to the assessment of depression and anxiety were very much more suited to the participants; there were no missed questions and the participants were happy to respond. This

supports the recommendation of Dennis et al. (2007) that, when researching the older population, adaptations are necessary for more accurate assessment. One minor change was made; this was the insertion of one additional item that could further assess changes of mood: 'Do you feel irritable or annoyed?'

Although there was now greater confidence in both the sensitivity of the assessment scales to measure change and in the participants' ability to respond, even with low cognitive function, there remained the challenges associated with the operation of the music players.

For this reason, it was decided to carry out one further pilot study. It would give an opportunity to try out the CD players with a different sample, to verify whether the IPT would be well received and to identify any further issues relevant to the procedure. The opportunity to carry out the study in a small care home would give some indication of any difficulties regarding regular access and adherence.

4.2.3 Pilot study three

St Teresa's Care Home is in South Kensington, London and is run and owned by Sisters Hospitallers of the Sacred Heart of Jesus, a Roman Catholic Congregation. It caters for 26 residents and provides 24-hour residential care. The manager of the home suggested five participants as having sufficient cognitive function to take part; of those five, three agreed to participate. These three were broadly representative of the sample to be recruited for the main study. They required a greater level of care than was possible in their own homes due to their physical frailty. All in their 90s, they were cognitively alert and fit for their age. One had Fuchs' disease, a degenerative eye condition and had lost her sight; she also had a 'bad back'; another suffered from 'intermittent claudication', a painful condition stemming from an insufficient blood supply to the muscles; the third, although generally in good health had very poor sight and was ill with flu during the course of the study. As before, pseudonyms were provided in order to ensure anonymity. The relevant demographic data is set out in Table 4.3 below:

Name	Age	Gender	Status	Children	Education	Ethnicity	Job	Health
Nicola	92	Female	Widow	Yes	Left school 18	White British	Interior designer	Fuchs' disease
Maria	92	Female	Married	Yes	Left school 18	White British	Housewife	Sight loss
George	92	Male	Widower	Yes	Higher education	White British	Stockbroker	Intermittent claudication

TABLE 4:3 DEMOGRAPHIC DATA OF PARTICIPANTS IN PILOTS STUDY THREE

The procedure in this study was the same as before, except that the music intervention period was reduced to one week. It was decided that this would be a sufficient period of time to determine the answers to my questions regarding the operation of the music players and the use of the IPT scale.

4.2.3.1 Findings from Pilot Study Three

This research in a care home environment was useful in that it gave an indication of some of issues that would pertain to the main study. Although many fear entry to a care home for the loss of independence that it entails, this did not appear to be the case at St Teresa's. The participants did not have to concern themselves with the daily tasks of shopping and cleaning; there were therefore fewer struggles in their lives. Care staff were always on duty and able to assist with the operation of the music players. In addition, there was always some level of companionship to offset the worst moments of loneliness. These three participants were very aware of these advantages and were grateful for them. For them, being in a care home, offered 'a grateful release from anxiety and fear' (Albans and Johnson, 2013: 9).

Whilst remarkably alert and mentally active for their age, all three participants complained of memory problems. This affected both the assessment of music preference and, more particularly, the operation of the music player. Neither Nicola, nor Monica were able to operate the music player. They were not accustomed to machines of any sort and this became something of a barrier. CDs were, for them, a new technology. There was a sense of 'I've got along all my life without it and it's a bit late to start now'. The absorption of new instructions was challenging. As Zajicek (2001) suggests, 'Old age is associated with a decline in intellectual skills which affects the absorption of new information.' George had his own music playing equipment, but also struggled to use it. He was more accustomed to listening to the radio. This issue that affected them all was resolved by care staff providing additional assistance.

Memory loss also affected the assessment of music preference. For example, Maria was unable to remember any names of songs, pieces of music or performers. Rather than struggle to remember, she asked for help with the selection, saying, 'could you decide?' and 'anything that you like'. Nicola, when asked if she could give some examples of the music that she enjoyed said, 'No, I wish I could. My short-term memory loss is I can't remember anyone's name. Difficulty in remembering my own'. For George, the problem was not so acute, but he struggled to remember names of performers that he particularly enjoyed. He complained, 'Oh, my brain is awful.' Although these had been challenges in Pilot Study Two, the effect on these participants was different. My impression was that their cognitive ability was considerably greater than those who took part in Pilot Study Two; they were therefore more aware of their deficiencies and found their cognitive and physical decline more distressing and frustrating. Despite their concerns, the information given was adequate and sufficiently detailed for the selection of their music programmes. The music that they selected was less wide-ranging than in the previous studies. All three participants chose classical music, with Nicola also requesting some 'trad jazz'.

In spite of the difficulties engendered by their memory loss, they had no problems remembering to listen to the music and adherence levels were therefore good. Their response to the music was positive. When ill with flu, Nicola said that the only thing that she had been able to do was listen to the music. She commented, 'I could actually enjoy it, I got so intrigued with listening to it, it was a new experience really.' She described it as an added interest in her life. Maria, initially sceptical about music's benefits, adhered to the programme and enjoyed it. She described the music as 'lovely' and used it to distract her from the boredom of her life. George also listened regularly and with great enthusiasm. He particularly enjoyed the music with which he was most familiar. He had asked for a Rachmaninoff piano concerto to be included in his programme but did not specify which one. It later transpired that he wanted the second, rather than the third, which was provided for him. Although he found it enjoyable, it did not engender the same level of enthusiasm as the other very familiar pieces.

Many have found that one of the benefits of listening to familiar and preferred music is the evocation of memories of events or situations from the past. This, for many, is a positive experience. However, for Nicola, she made it clear that she did not want to listen to music that reminded her of happier times. The past for her was a happier place. Memories evoked through music were therefore painful, an unhappy contrast with her current situation. This is not unusual and was pointed out by Clair (1996) and Hays et al. (2002). They observed that not all people wished to reminisce and that particular music may evoke painful memories.

In marked difference from the first two pilot studies, the three participants were very forthcoming about their experience of pain and their medical histories. George had what he described as 'strong' pain when walking but otherwise was pain free. Nicola was in constant pain from impacted discs in her back, whilst Maria was in considerable discomfort from the symptoms of flu, which she had for the period of the intervention. There were no problems in completing both pain assessment measures, the IPT and the VDS. This was in spite of the issues of sight loss affecting both Nicola and Maria. Instead of showing them the thermometer and asking them to rate their intensity of pain, the thermometer was described to them. The VAS would have been impossible to use.

The participants took the questions seriously and gave careful thought before responding. However, there was one occasion that demonstrated how difficult it is to be sure of their accuracy. During the second interview, Maria talked of her feelings when she was ill with flu the previous week. She admitted to having been depressed and had thought that she was going to die. This bore little relationship to the responses she had given at the time.

There were no new challenges that came to light in this final pilot study. Neither the acknowledgement of pain nor the assessment of mood raised any issues and adherence to the protocol was good.

4.2.3.2 Adaptations

Despite the fact that no issues were raised regarding the assessment of depression and anxiety, it was decided to make some final changes. This was as a result of a recommendation given by a primary health provider who, for the assessment of depression in older people, used the PHQ-9 scale. It is one of the few scales that have been specifically studied and validated for use in older adults and has been recommended for routine application (Espinoza and Kaufmann, 2014).

This scale was developed by Kroenke and Spitzer (2002), and its purpose is to screen, diagnose, monitor and measure depression. It is similar in length, style and content to the CESD-10, consists of nine questions and also has responses based on a four-point Likert scale. Although some of the items were similar, it was felt that the range of questions was better suited to the needs of this population. However, as before, some adaptations were made. All depression scales ask about levels of mood experienced during a recent defined period. For example, this scale asks: 'Over the last two weeks, how often have you been bothered by any of the following problems?' It was unlikely that participants would be able to recollect their feelings and moods over a two-week period. Besides, the purpose of the assessment was to register any weekly changes. This was therefore changed to 'During the last few days'. Some memory of the recent past is still required, but it was thought that the less specific timeframe would be less demanding on their ability to remember how they felt.

The range of possible responses was:

- Not at all
- Several days
- More than half the days
- Nearly every day

This range of response is rather confusing and it was felt that participants would find it difficult to

select the most appropriate answer. The difference between 'several days' and 'more than half the days' is very slight.

It was therefore adapted to the following:

- Not at all
- A little
- Moderately
- Most of the time

Although responses using absolute frequencies (such as two days per week) were recommended by Schaefer and Olson (1981), this suggestion was not adopted as it was felt that the degree of specificity would not engender any greater accuracy of response; indeed, it might elicit an 'I don't know' response. These adaptations were in line with the recommendation that each question should have an adequate range of responses and where necessary should be re-worded (Peat et al. 2002).

The questions related to feeling low, sleep problems, tiredness, appetite, lack of interest or enthusiasm, concentration, slowness or fidgeting and energy. Two questions were omitted. One asked if they thought they would be better off dead; the other asked if they felt a failure or had let people down. Both of these would be difficult for participants to answer orally; few would admit this to a stranger and it would be unlikely to elicit an accurate response.

The inability to use the music players gave the greatest cause for concern. Whilst chosen for its ease of use, the CD player was clearly not suitable. It was therefore decided to search for an alternative. Details of this are given in Chapter Five.

4.2.4 Summary of the pilot studies

The challenges of research with older people discussed in 4.2 of this chapter were evident in the context of these pilot studies: they included recruitment, the selection of assessment measures, adherence, the use of technology and attrition. Issues such as recruitment and attrition are inevitable and there is little that can be done to mitigate their occurrence. The problems of adherence and accessible technology may be lessened by assistance from care staff or a more suitable music player or both.

The assessment of the various methods of measuring pain, depression and anxiety in the older population led to a better understanding of the importance of not overburdening participants with too many questions, of using different words to help encourage the acknowledgement of pain, of avoiding questions that could be perceived as intrusive and of sensitive adjustment of the questions about music preference if memory loss caused anxiety. The importance of using measures that are relevant and accessible to a wide range of cognitive function was recognised. Ethical considerations, such as the preparation of participants for the end of the study and the return of the music players were noted. To avoid any undue disappointment, weekly reminders of the duration of the research procedure were added to the interview protocol.

It was hoped that the adaptations made would ensure that the final choice of questions used in the main study would be suitable for the care home population and would provide a valid indicator of changes in levels of depression and anxiety. The duration of three weeks for the music intervention did not raise any issues. However, it was noted that there was some potential for interview fatigue in the main study due to the crossover of the two groups, giving a total assessment period of six weeks.

As well as these yielding some information about methodological issues, the pilot studies were helpful in giving greater insight into various aspects of old age. For example, the experience of fear,

expressed so forcefully by participants in pilot study one, was a powerful illustration of some older people's daily experience. The effects of memory loss were greater than had been anticipated and affected a number of activities such as going out on their own, remembering to do things, learning new skills and the recall of recent events. For some, this contributed to a growing loss of confidence in themselves.

The response to the music selected for participants was encouraging. Despite the variation in the amount of information given regarding preference, all programmes were well received and the comments made suggested that the music had had a positive effect.

Although the first two pilot studies were conducted amongst those able to live with some degree of independence, it was expected that the issues raised in the main study would be broadly similar. It was hoped that the lessons learned and the refinements made during this period would result in appreciable benefits to the main research study.

A detailed account of the main study is given in Chapter Five with information about the sample, the selection of music and the procedure. The results of the analysis of the quantitative data are then presented.

5 Chapter Five

5.1 Study one: a randomised control trial, analysis and results

5.1.1 Research design and methodology

The three pilot studies provided an opportunity to gain further understanding of old age as experienced by some of the most vulnerable older people in our communities and care homes. These studies also performed a vital function in the search for assessment measures that were sensitive to weekly changes and that were suitable for the variable levels of cognitive function within this population group. In addition, the assessment of music preference, the duration of the music intervention and the mode of its delivery were tested for their suitability.

As discussed in Chapter Four, modifications were made to the assessment measures and to the mode of music delivery. In response to criticisms of past research and to the recommendations made by Cepeda et al. (2006), attention was paid to the size of the sample in the expectation that the results might be regarded with greater confidence.

This chapter will give a detailed account of the participants, a description of the music selected, the procedure carried out and the mode of music delivery. This will be followed by a presentation of the results as found by an analysis of the quantitative data.

5.1.2 Participants

5.1.2.1 Environment

The literature review of Chapter Two (p.41) discusses recent trends in the composition of the care home population. Rather than being an alternative form of accommodation for older people in need of some support, the care home has become a last resort for those with high dependency levels. The numbers of 'frail' residents are decreasing, whilst the numbers of those suffering from dementia are increasing. Between 2001-2 and 2012, the percentage of those categorised as 'frail' reduced from 77% to 60%. Over the same period, the numbers of those diagnosed with dementia rose from 14% to 23% (Lievesley et al. 2011). Lengths of stay are declining and could be reduced to as short as nine months for the frail, and to just over a year for those with dementia by 2015 (Forder and Fernandez, 2011).

Whether at the very end of life or not, this is a time of decline, either physical or psychological or both. It is within such an environment that the research took place.

5.1.2.2 Recruitment

The recruitment of participants for research projects is always challenging. Given the statistics reported above, and the findings of the literature review, it is clear that gaining access to the care home population is not easy. This was further confirmed by the difficulties of recruitment for the pilot studies as described in Chapter Four. The deferred entry, increasing frailty and the rise in dementia indicate that these challenges can only increase.

The recruitment of care home residents for a research study relies not only on the individuals' willingness to participate but also on the cooperation of the care home manager. The extent to which managers have autonomy over the activities in the homes varies. An owner-manager is, of course, able to make independent decisions. However, a manager of a care home that is within a

larger affiliated group may have to refer to a higher authority, which can be a laborious process and is not always carried out (Manthorpe, no date). Besides the administrative issues, not all care home managers are willing to accommodate a research project of this kind. Many fear that it will be disruptive or demanding of staff time. The fact that the average care home in England provides an average of only 25.17 places (Lievesley et al. 2011) exacerbates the problem. The number of residents both able and willing to take part may therefore be very low. This was the case described in Pilot Study Three, in which only three out of a total of 26 residents were recruited. Another example is the care home that I approached where, according to the activities coordinator, none of the 72 participants were capable of taking part.

Besides the difficulties of accessing potential participants, obtaining consent can be a frustrating task. This may be due to the longer time that older people generally need to come to a decision (Gueldner and Manner, 1989) or may be down to a reluctance to sign a form (Bowsher et al. 1993). A case that illustrates this problem is to be found in a study by Brod and Feinbloom (1990). Of 114 residents, 100 consented orally to participate in the research but the numbers reduced to 65 when written consent was requested.

As a first step, I made an initial approach to the managers of a wide range of care homes in the Greater London area to enquire whether a research project of this nature would be considered. If the response were positive, I would arrange an interview in order to explain more fully what would be involved. As well as giving full details of the research procedure, ethical issues regarding anonymity, confidentiality, the right to withdraw and the safety of music equipment were explained.

In order to take part, potential participants needed sufficient cognitive ability to understand and respond to questions as well as sufficient hearing acuity both for the interviews and for listening to music. These requirements reduced the number of residents available to take part. In most cases, the managers or their staff identified those whom they thought would be capable and who would enjoy the experience. In two situations, there was an opportunity to meet with a group of potential

participants and explain directly to them what was involved. Where there was a positive endorsement from the manager, this helped to dissipate fear or mistrust and assisted the recruitment process.

The research procedure was explained as clearly as possible to those interested in taking part and an information sheet provided all the relevant details. This included a reminder that they could withdraw at any time. There was an opportunity to ask any questions before being asked to sign participation consent forms. In a small number of cases, a family representative was asked to sign on the participant's behalf if there were any concern regarding his or her capacity to provide consent.

In order to amass a sufficiently large sample, the participants were selected from nine different care homes of differing sizes, all but one situated in Greater London. Due to the difficulties of recruitment, it was necessary to seek out care homes beyond the original catchment area. The sample recruited amounted to 117. This was a little short of the target of 120, and reflects the difficulties of recruitment within this population. The homes were diverse, comprising one that catered for retired army personnel, four that were run by Catholic nuns, one by an Anglican convent, three by Barchester Healthcare³⁵ and one run by Optalis³⁶. They varied in the numbers of residents catered for, and ranged from 37 to 95, all above the national average. Unless stated, they provided 24-hour nursing and residential care; their care categories included end of life, dementia, respite care and rehabilitation. Accommodation varied from purpose-built homes equipped with single rooms and en-suite bathrooms to old-fashioned buildings with a range of single and shared rooms with no en-suite facilities. With one exception, all homes fulfilled the basic requirements of the Care Quality Commission³⁷. It was marked down on its treatment of residents and its quality and

³⁵ Barchester Healthcare was established in 1992 and is now one of the UK's largest independent care providers.

³⁶ Optalis is based in the Wokingham Borough and offers a range of care and support services for all ages.

³⁷ The Care Quality Commission: The independent regulator of all health and social care services in England.

suitability of management. Individual descriptions, each of which was approved by the management of each home, are given below.

Nazareth House is situated in Hammersmith, West London. It is one of 14 homes bearing the same name, all run by the Sisters of Nazareth, a congregation of religious women. Their order was formed in 1857 for the purpose of looking after the old and the orphans of London and, in 2007, they celebrated their 150th anniversary. They list their core values as being respect, love, compassion, patience, justice and hospitality. The home, a large Victorian building, caters for 94 residents over the age of 65, 61 in single rooms and 17 in shared rooms with no en-suite facilities.

St Wilfrid's is owned by the Congregation of the Daughters of the Cross of Liège, a registered charity for the promotion of healthcare and education. The home was established in 1869 and moved to its present site in 1976 when it was registered as a care home. It is located in the borough of Kensington and Chelsea. Purpose built, it caters for 44 residents, all in single rooms with en-suite bathrooms. St Wilfrid's is a residential home without nursing or dementia care.

The Margaret Thatcher Infirmary is part of the Royal Hospital Chelsea, the home for army veterans known as 'Chelsea Pensioners' for over 300 years. The Infirmary was opened in 2009 and is a state-of-the-art care home and GP medical centre. It caters for up to 100 residents in en-suite facilities and provides residential, nursing and dementia care. It is unique in that it caters only for Chelsea Pensioners who are already residents at the Royal Hospital but who require additional care and support. The majority of the residents are male, unusual in the wider UK care home population, which is predominantly female.

Queen's Court in Wimbledon belongs to the Barchester group of over 220 homes. The group is one of the UK's largest providers of care, looking after a total of more than 10,000 older people. Queen's Court, a purpose-built home behind its original Edwardian front, is located near the town

centre and caters for 41 residents who are accommodated in single rooms with en-suite bathrooms. It provides residential, nursing and dementia care as well as rehabilitation.

Lynde House in Twickenham is another member of the Barchester group. It is also purpose-built and is located in a residential area near the River Thames. It caters for 76 residents who are accommodated in single rooms with en-suite toilets. It provides nursing care for older people, including those with dementia, palliative care, and care for people with sensory disabilities.

Atfield House in Isleworth is the third home that is part of the Barchester group. Again purpose-built, it is situated in a new suburban development near to the centre of Old Isleworth. Sixty-three residents are catered for with a separate wing for dementia sufferers.

Suffolk Lodge in Wokingham is the only care home included in this study that is situated outside London. The difficulties of recruitment led to a search for care homes outside the original catchment area of Greater London. Owned by Optalis, it is close to the town centre and was built in 1983. The changes that have taken place in the care home population over the last 20 years or so have resulted in a number of different demands being made of the homes. For example, the increase in the number of wheelchair users requires improved access. The bedrooms are small and have no en-suite facilities. It caters for 37 residents.

St Mary's, Chiswick, has been run by the Anglican Sisters of St Margaret for over 100 years. It is situated at the junction of two of the busiest commuter roads in west London, just off the Hogarth roundabout. Despite the age of the buildings, much of the accommodation is new and the remainder has been modernised so that all rooms have en-suite bathrooms. Unusually, they offer some double rooms for couples. They cater for 59 residents.

St Peter's, Vauxhall is run by the Catholic order, The Little Sisters of the Poor. They are an international congregation of Roman Catholic women founded in 1839 to serve the elderly poor.

The sisters came to England from France in 1851. They have been on their current site in a residential area near Vauxhall Bridge since 1863. In 1984, the home was rebuilt. As is the case with Suffolk Lodge, not all the modern requirements for residential and nursing care were necessary at that time, so there is a continuing need for alterations. In addition to its care facilities for 56 residents, there are 12 flats for those who are still able to lead independent lives.

5.1.2.3 Demographic data of participants

As already stated, eight of the nine care homes are located in Greater London. However, the constituency of each home varies in terms of the social, economic and ethnic backgrounds of their residents. This may be due to the particular location of each home, some being more affluent than others. It may also be due to the religious affiliation that four of the homes espouse. Despite the differences, much of the demographic data show considerable consistency across the whole sample.

Firstly, this applies to the age profiles. Ages were given for 109 of the participants. There were four missing values; two due to memory loss and two refusals. The mean age of the sample was 86.38, the median age was 87 and the range was 42. This corresponds to the median age of 85 across the care home population in the UK (Age UK, 2014).

The residents' median ages are shown for each care home in Figure 5.1 below.

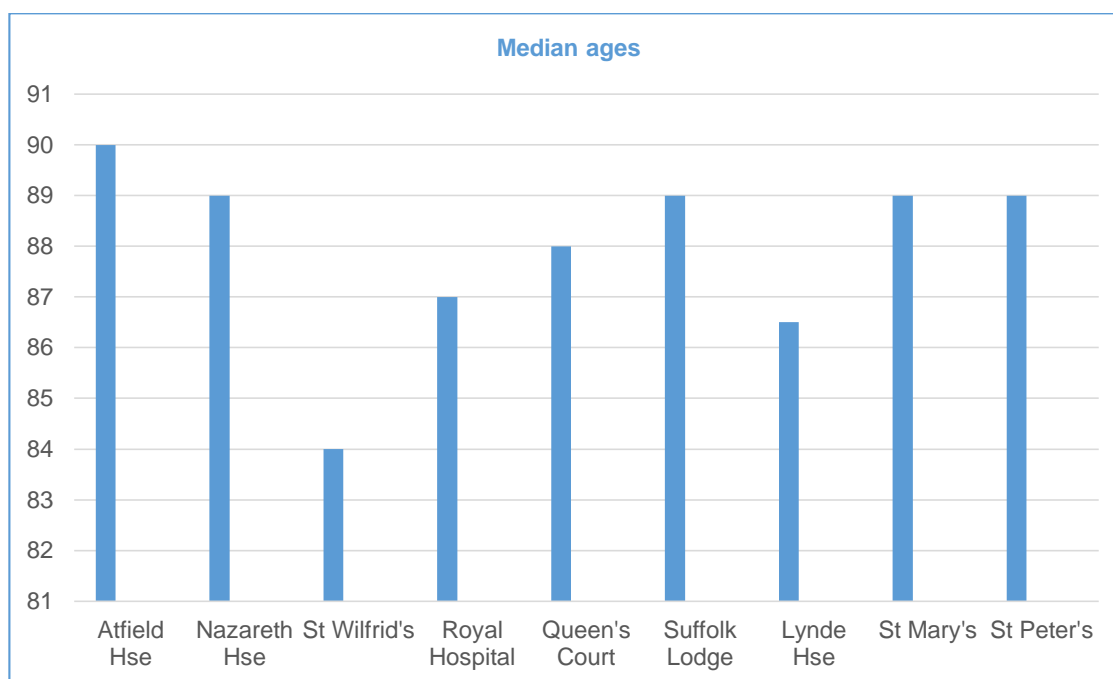


FIGURE 5:1 A COMPARISON OF MEDIAN AGES IN THE CARE HOMES

Although the differences are small, the lower age of residents at St Wilfrid's may be explained by the fact that nursing and dementia care is not provided; residents tend, therefore, to be in better health and younger in age than in care homes with a wider remit; if their health declines, they are transferred to alternative care homes able to provide the appropriate care. Similarly, Lynde House does not cater for residents with dementia. The slightly lower age of those at the Royal Hospital may be explained by the all-male sample. The average age of males (81) in the care home population is lower than that of females (86), as already referred to in Chapter Two (Lievesley et al. 2011). It may reflect an earlier decline in health in the male population.

With respect to gender, as is the case in the majority of care homes, females were in the majority. They accounted for 72.6% of the total sample, had a median age of 89 and ranged in age from 59 to 101 years ($SD = 7.074$). Males accounted for 27.4% of the total sample, had a median age of 81.5 and ranged in age from 70 to 95 years ($SD = 6.68$).

This corresponds to the general care home population: in 2009, 72% of residents in the UK were female (Lievesley et al. 2011). In three homes (Nazareth House, Atfield House and Queen's Court) the participants were all female and at the Royal Hospital, Chelsea they were all male.

The proportion of males and females in the sample are shown in Figure 5.2 below.

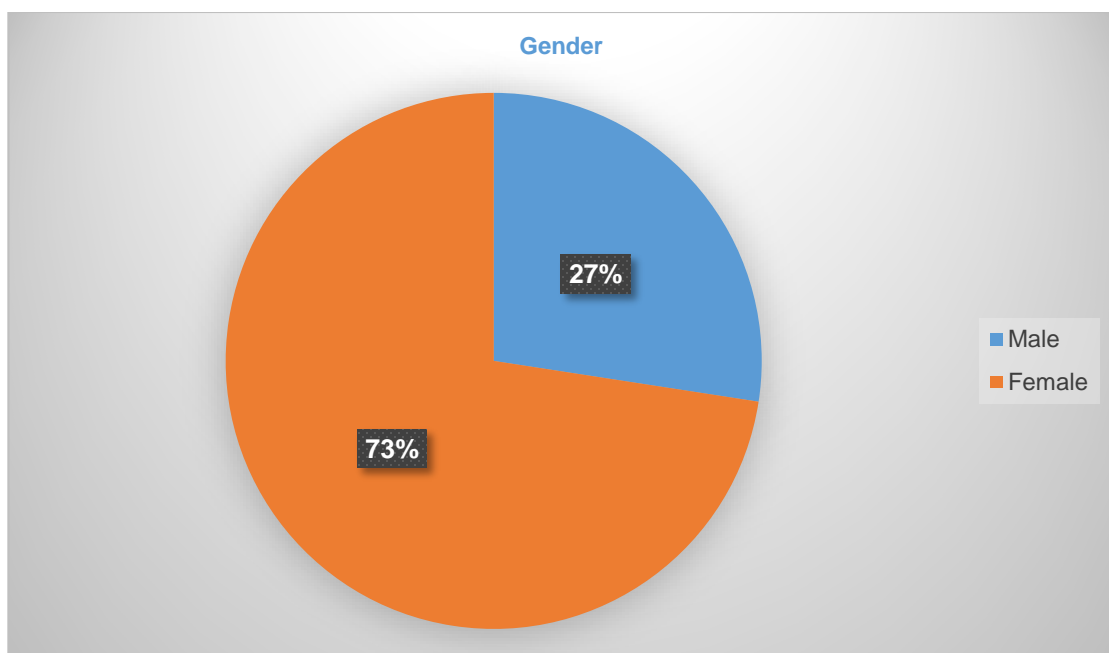


FIGURE 5:2 THE PROPORTION OF MALES AND FEMALES

With respect to ethnicity, the greater proportion of the sample was white British, who comprised 78% of the total sample. Other white backgrounds such as white Irish or French accounted for 15% and the remaining eight of the 113 participants were non-white. It is not known how representative these statistics are of the wider care home population. Currently, the ethnic minority population of England and Wales is younger than the majority white population, and this is likely to be reflected in care homes (Manthorpe, 2010). However, their numbers are likely to expand rapidly (Blood and Bamford, 2010). The breakdown is shown in Figure 5.3 below.

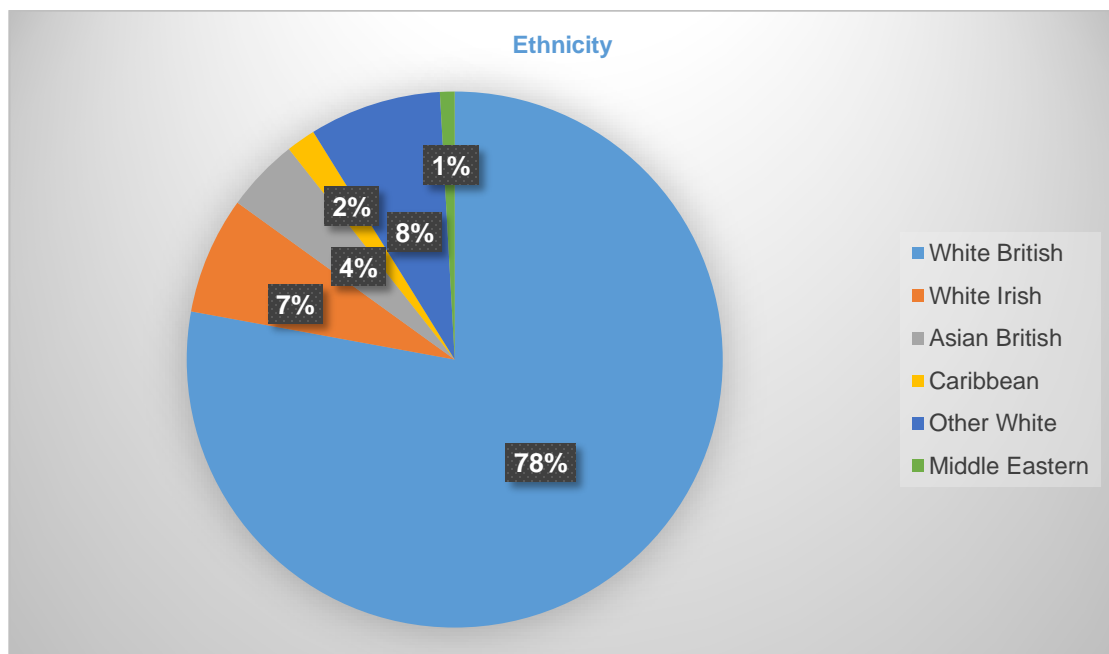


FIGURE 5:3 THE PROPORTIONS OF DIFFERENT ETHNIC GROUPS

With respect to marital status, the majority of this sample was widowed. Indeed, the death of a spouse is often the catalyst for admission to a care home. Of the total sample, 69% were widows, 22% were single, 4% were married and 5% were divorced. These different proportions are shown in Figure 5.4 below.

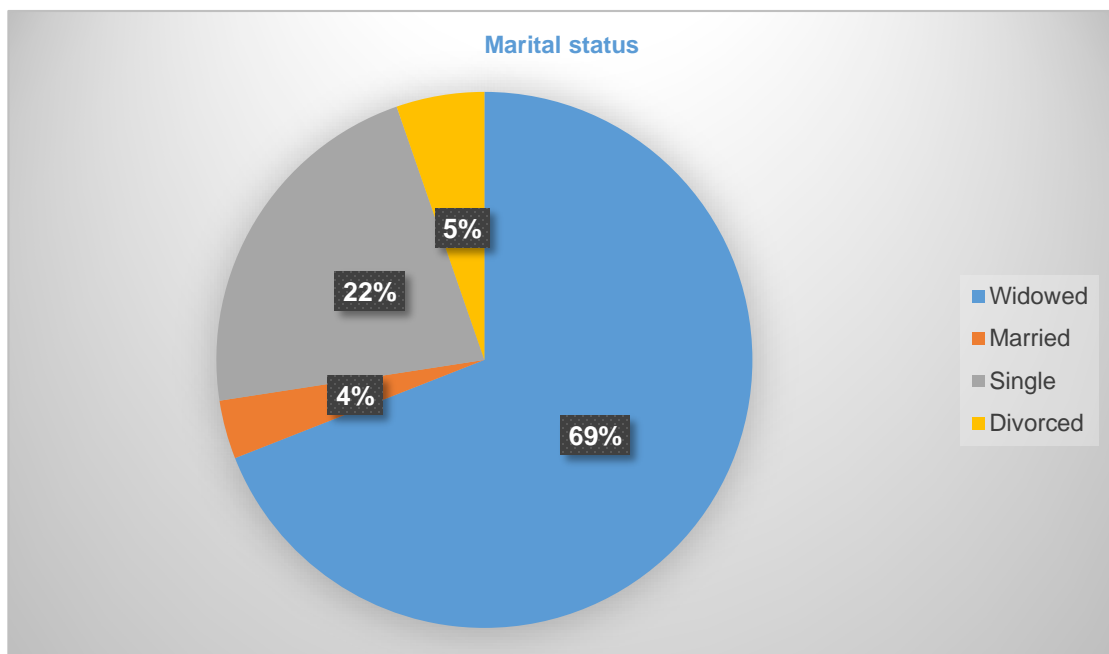


FIGURE 5:4 THE PROPORTION OF THOSE WIDOWED, MARRIED, SINGLE OR DIVORCED

Table 5.1 summarises the information from each demographic variable. Scores are given for the total sample as well as individual care home scores.

Care Home	N	Median age	% Widows	Total	% Males	Total	% Females	Total	% White Brit	Total
Total	113	87	69	78	27.4	31	72.6	82	77.9	88
Atfield House	7	90	71.4	5	0	0	100	7	85.6	6
Lynde House	17	87	88.2	15	11.8	2	88.2	15	94.1	16
Nazareth House	18	89	44.4	8	0	0	100	18	50	6
Queens Court	13	88	100	13	0	0	100	13	76.9	10
Royal Hospital	18	87	72.2	13	100	18	0	0	100	18
St Mary's	7	89	42.9	3	14.3	1	85.7	6	100	7
St Peter's	15	89	60	9	26.7	4	73.3	11	66.7	10
St Wilfrid's	12	84	50	6	41.7	5	58.3	7	50	6
Suffolk Lodge	6	89	100	6	16.7	1	83.3	5	100	6

TABLE 5:1 DEMOGRAPHIC DATA OF EACH CARE HOME REGARDING AGE, MARITAL STATUS, GENDER AND ETHNICITY

In summary, according to Lievesley et al. (2011), the variables of age and gender represented in this sample are what would be expected in any care home in the UK. It is expected that the figures for marital status would also be comparable, but no data are available. The figures for ethnicity may not be as representative but, again, no data are available to provide a comparison.

There will always, however, be differences in the social, economic and educational backgrounds of those, either within a care home or between care homes. The sample was divided quite evenly between those who left school at 16 (38%), those who left school at 18 (38%) and those who went on to higher education (36%). However, within the individual homes there was a narrower range of educational achievement.

For example, the sample at St Wilfrid's care home, situated in an affluent area in Chelsea, central London, consisted of nine participants who had had a higher education and three who had left school at 18. Similarly, at Queen's Court, Wimbledon, only one participant left school at 16; the remainder were equally divided between those that left at 18 (six) and those who went on to higher education (six). This is in contrast to the participants of the Royal Hospital. Although, like St Wilfrid's, this is situated in Chelsea, it caters for a different population, ie retired army personnel. Fifteen of the 18 participants left school at 16, three left at 18 and none continued on to higher education.

5.1.2.4 Choice of musical genre

In light of the wide range of socio-economic backgrounds of the participants, it might be expected that there would be great variation in their choices of music genre. There is a presumption that those of a higher educational status will show a greater tendency to enjoy classical music. This was observed by van Eijck (2001) who commented that 'older people with high schooling levels prefer

the classical genres'. This had previously been noted by Schuessler (1948), who suggested that this was because the more educated classes are more likely to receive music training, which is a profound influencer of musical taste. Towse (1994, cited in Prieto-Rodriguez and Fernandez-Blanco, 2000) agreed with them and added that skilled and unskilled workers, together with the unemployed, were attracted by more popular genres. This did not always turn out to be the case however, and is illustrated by two care homes whose residents had different educational opportunities as cited above in 5.2.3. All participants at St Wilfrid's chose classical or light classical music, which was not surprising. However, at the Royal Hospital where no participants received a higher education, 15 out of the 18 participants chose to listen to classical or light classical music. Overall, this was the most popular choice of music genre. With the exception of Suffolk Lodge ($N = 6$), a majority in every home opted to listen to classical music. This is illustrated in Figure 5.5 below.

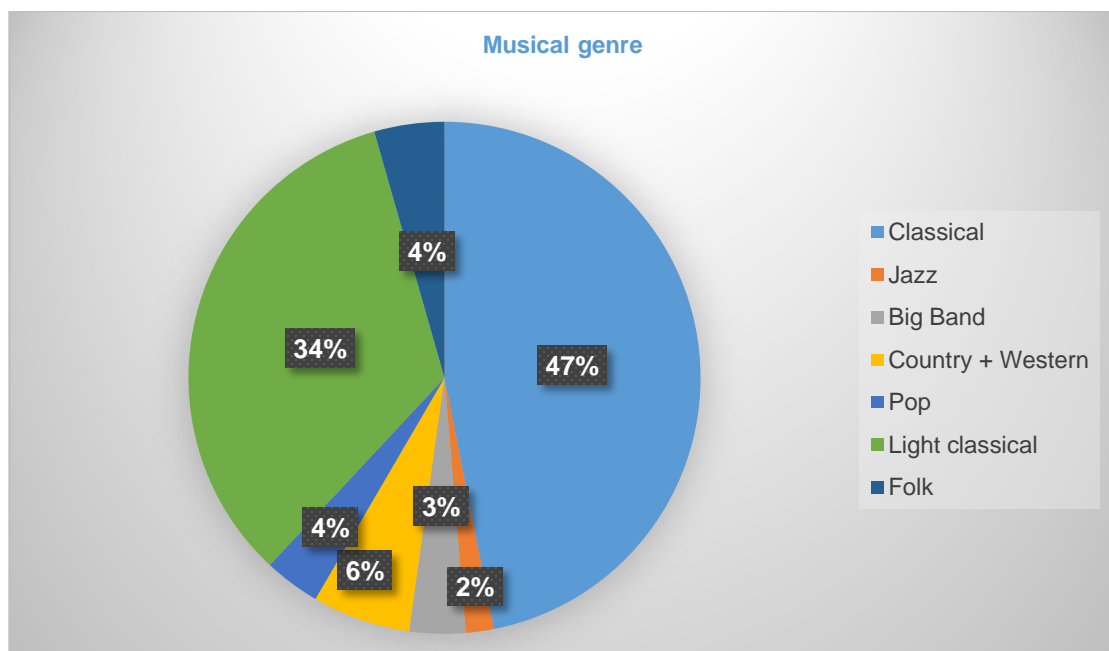


FIGURE 5:5 THE RANGE OF SELECTED MUSICAL GENRES

5.1.2.5 Health status

There was a wide range of presenting health conditions which were representative of the disorders experienced by the wider care home population. The most commonly occurring conditions in the care home population, according to the Bupa³⁸ census (2012), are dementia, stroke, depression, epilepsy and Parkinson's disease. Within this sample, these were strongly represented as well as other common conditions such as cancer, diabetes, arthritis, osteoarthritis, rheumatism, heart conditions and macular degeneration. There were other pathologies represented such as gout, leukemia, lupus, rheumatoid arthritis, multiple sclerosis, polymyalgia rheumatica and multiple system atrophy (MSA), but these represented a small number of the sample.

Forty-seven percent of the participants had problems with mobility: 29 were in wheelchairs, 22 used walking frames and two used a walking stick. These figures are in line with the statistics provided by Lievesley (2011) on page 144 of this chapter.

5.1.3 Research design

The methodology used for this study has already been described in Chapter Four. It is repeated here so that it can be read in the context of Study One. It was a randomised control trial with a cross-over design. The independent variable was an individual listening programme of preferred music of a minimum of 30 minutes duration; this was listened to each day over a three-week period. The dependent variables were the levels of pain, depression and anxiety experienced by the participants during the period of the music intervention.

Participants were randomly divided into two groups, an experimental group and a control group. Those in the former took part in the music intervention whilst those in the control group maintained their usual routine. Prior to the start of the music intervention, demographic data were collected and

³⁸ Bupa: an international private healthcare company, founded in 1947

music preferences assessed. A questionnaire that incorporated three previously published and validated instruments adapted for this research study was used for the assessment of each dependent variable: the STAI-Y anxiety measure, the PHQ-9 depression measure and the VDS and IPT pain measures. These scales were used to determine baseline levels of pain, depression and anxiety at the start of the intervention for both groups. In addition to these assessments, participants were asked for a rating of their own perception of their health status. This was assessed on a five-point Likert scale ranging from one (poor) to five (excellent). Further questions relating to pain were included. These related to its location and its effect on behaviour and mood. There were also questions relating to their adherence to the intervention and their response to the music programmes. Slight modifications were made to the questionnaire in order to ensure that the questions relating to the music were relevant to each stage of the intervention. An example of the questionnaire can be found in Appendix A. After the prescribed three weeks of music listening, the two groups switched over. This ensured that all participants were able to receive the potential benefits of the intervention and allowed for the assessment of any longitudinal effects. The once-weekly assessments were carried out in an identical manner until the end of the study.

Statistical analyses of the quantitative data were undertaken to evaluate any changes in the assessed levels of pain, depression and anxiety and to determine whether any such changes could be attributed to the effect of the music intervention. Additional qualitative data were analysed for emerging themes that might support the findings from the quantitative data and provide some explanation for them.

In order to gain a more objective assessment of the participants' physiological and psychological health, care staff were asked to complete a simple questionnaire at the start of the study. This included five questions relating to physical health, general mood and levels of pain, anxiety and depressed mood. To answer each question, there was a choice of four possible responses. For example, to answer the question, 'How much physical pain do you think he/she has?' the choice of

responses was 'none', 'mild pain', 'moderate pain', 'severe pain'. They were also invited to add any further observations.

5.1.4 Procedure

Data collection occurred over a 14-month period starting in October 2012. The identical six-week intervention was carried out in the nine different care homes and the samples ranged in size from six to 18 participants. The research was carried out in either two or three care homes concurrently.

Recruitment was carried out in each care home. The participants who indicated that they would take part were asked to provide signed informed consent forms (Appendix H), and were then randomly allocated into either the experimental group (Group One) or the control group (Group Two).

Randomisation was achieved by writing each participant's name on a piece of paper. These papers were placed into a hat and thoroughly mixed. They were then drawn out one by one and placed alternately into two piles, each representing either the experimental group or the control group.

Relevant data pertaining to each group is shown in Figure 5.2 below.

Variable	Total	Group 1		Group 2	
	N = 113	N = 55	% = 48.7	N = 58	% = 51.3
Median age	87 (SD = 7.1)	88 (SD = 7.16)		87 (SD = 6.95)	
Male	31 (27.4%)	17	30.9	14	24.1
Female	82 (72.6%)	38	69.1	44	75.9
Widowed	78 (69%)	35	63.6	43	74.1
Single	25 (22.1%)	11	25.5	14	19
Married	4 (3.5%)	4	7.3	0	0
Divorced	6 (5.3%)	2	3.6	4	6.9
White British	77 (77.9%)	42	76.4	46	79.3
Other ethnic background	25 (22.1%)	13	23.6	12	20.7
Left school at 16	38 (33.6%)	14	25.5	24	41.4
Left school at 18	38 (33.6%)	21	38.2	17	29.3
Higher education	36 (31.9%)	19	34.5	17	29.3
Baseline pain measure	3.42	3.76	SD 2.37	3.07	SD 2.18
Baseline anxiety measure	21.34	21.23	SD 5.97	21.45	SD 5.18
Baseline depression measure	13.7379	13.04	SD 4.11	14.05	SD 3.74

TABLE 5:2 DEMOGRAPHIC DATA OF THE SAMPLE, THE EXPERIMENTAL GROUP AND THE CONTROL GROUP

Participants were informed of their group allocation on the first day of data collection in each care home. Clear explanations were given as to the use of the data collected from them. They were reminded that all data, recorded and notated, would be treated confidentially and anonymised in all outputs. Permission to record the interviews, although previously given when signed consent was provided, was again requested. Individual interviews of approximately 30 minutes were then carried out to collect basic demographic data (Appendix B), as already discussed, and to determine each individual's choice of music.

The same questionnaire that was used to establish music preference for participants in the pilot studies was used. As briefly described on page 105, it consists of a range of questions about the extent of their musical experience and engagement (if any), music listening habits, the importance of music in their lives, preferred genres, instruments, composers, performers and favourite pieces or songs. There was an opportunity for participants to talk about music that had particular meaning to them from the past and to describe the mood of the music that they would enjoy (Appendix A). This last question was included to facilitate the selection of the most appropriate music for each participant. Silvestrini et al. (2011) observe that depressed people tend to dislike highly arousing music. Given the numbers of people with depressive symptoms in this sample, this is something to be aware of. There is also the effect that different personality types have on the mood of the music that they are most likely to enjoy. For example, Kopacz (2005) observes that extroverts are more likely to enjoy music with a high stimulative value, whereas introverts may prefer music with a low stimulative value; what one enjoys, another may find stressful.

Information from the questionnaire was used to compile an individual programme of music of approximately one and a half hours for each participant. The procedure used was the same as in the pilot studies; in cases where the information given was more general, the choice of mood, style and tempo was researcher-selected. The programmes can therefore be said to be tailor-made, based on the participants' own selection (see Appendix G for an example). The quantity of music

provided was in order to forestall any boredom that might ensue from listening to the same 30-minute programme every day for three weeks.

As discussed in Chapter Four, the music players used were not generally suitable and a search was carried out for an alternative. Those on sale on the high street were no more suitable than the one used in the pilot studies; the controls were small and it was unclear what function they each had. The final choice was a USB memory stick player supplied by The Royal National Institute of Blind People (RNIB)³⁹. It has four large yellow control buttons, an extra-large volume control dial and can be powered either by battery or a power source. It can accommodate up to 32GB of memory. The colour and size of the controls ensured that those with some visual impairment were more able to identify the different control buttons. They were also more suited to the care home population in general. An image of the player is shown in Figure 5.6 below.



FIGURE 5:6 USB MEMORY STICK PLAYER

Once selected, the music programme was downloaded either to a memory stick or on to CDs. Nineteen of the 117 participants possessed a CD player. Of these, 15 were male. For the remaining

³⁹ RNIB: a charity and membership body of and for blind people and those with sight problems.

participants, the USB music player was provided for the duration of the intervention. Each was equipped with a memory stick, clearly labelled with the participant's name and pre-loaded with the individual music programmes.

Baseline assessments of each participant's levels of pain, depression and anxiety were made using the assessment measures as described (Appendix C). Participants in the experimental group were given either the prepared CDs or memory sticks, together with a list of the music chosen for them. Time was spent with each participant to ensure that they were able to operate the music players, whether their own CD player or the music players provided for them. For those with poor sight or memory loss, care staff were asked to provide assistance, either by turning the music on, or by giving regular reminders to the participants. Volume levels were determined, where possible, by each participant. Those in the control group were given no instructions, other than to maintain their usual routines.

Over the ensuing three weeks each participant took part in a once-weekly interview, irrespective of the group that they were in. This consisted of the same assessment of the three dependent variables. For those in the experimental group, there was also an opportunity to comment on the music that they had been listening to: whether they enjoyed listening to it, how it made them feel, whether they had any problems using the music players. For the most part, the response to the selection of music was very positive and corresponded to participants' preferences. There was a small number of individuals for whom the choice was not so successful; in these situations, further questions were asked about their preferred music and their programmes were subsequently modified.

After three weeks, the two groups switched over; the experimental group became the control group and vice versa. This ensured that all participants were able to experience the music intervention. It also allowed for the measurement of any residual effects of the music. Data that were collected

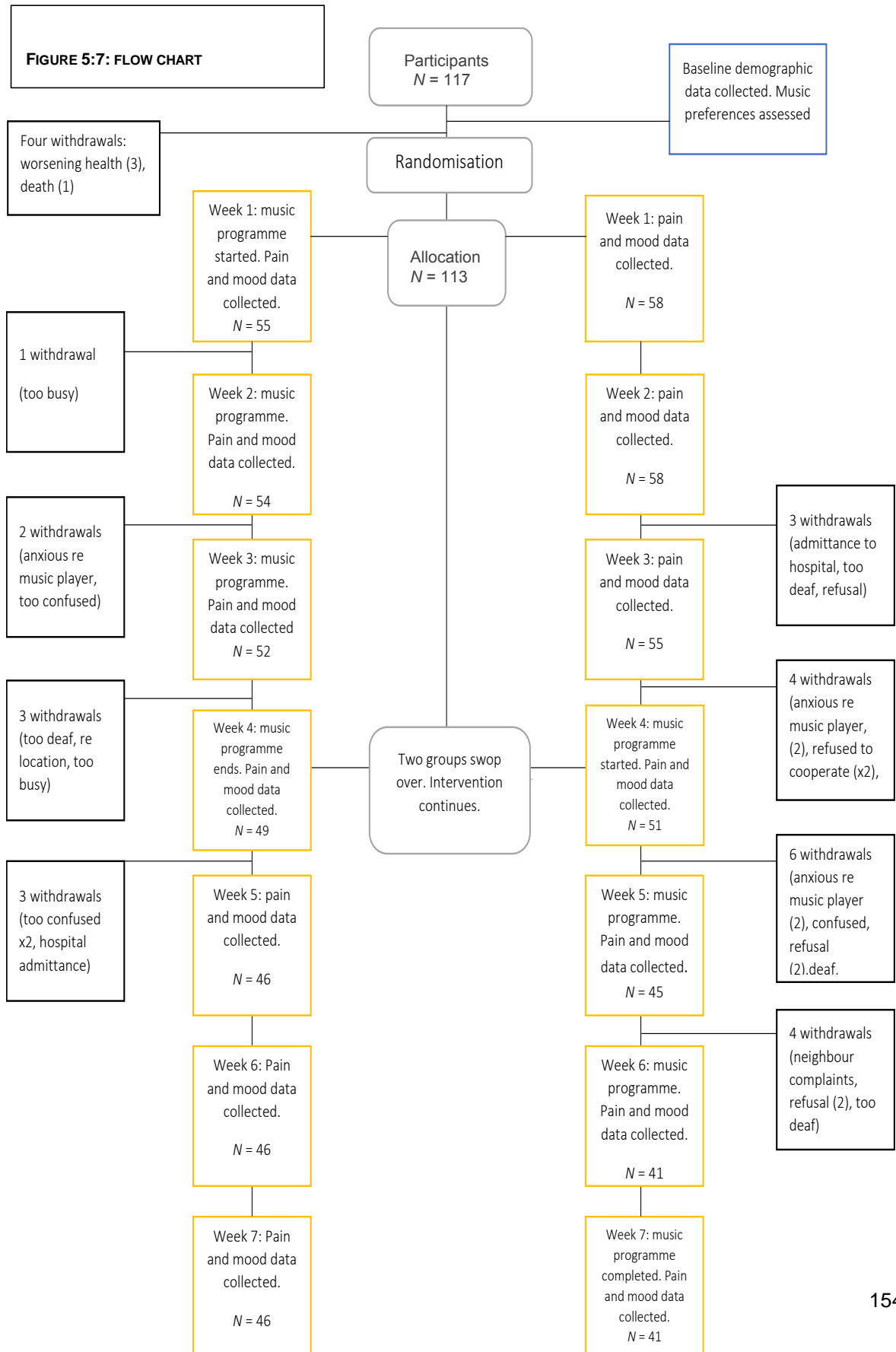
from the group allocated first to the music intervention and then to the control period could be analysed for any such benefits.

This programme was carried out in the same manner in each of the nine care homes.

Each week, participants were told about the progress of the study; whether it was week one, week two or week three. This was in accordance with modifications made following the pilot studies. It had been decided that participants should be given regular reminders that the music players would be on loan for that period only.

Care staff in each care home were requested to complete their own questionnaires at the beginning of each study period.

Each stage of the procedure is presented in Figure 5.7 below, and also provides details of attrition levels over the course of the research study.



5.1.4.1 Analysis of quantitative data

There is some debate as to whether Likert scales should be treated as ordinal or interval scale data. In an evaluation of pain scales for use with older adults, Taylor and Herr (2003) recommend that the data from measures such as the IPT, should be treated as being on ordinal rather than on interval scales. They suggest that the use of rank ordering rather than exact values is more suitable for older people. In addition, Jamieson (2004) recommends that only in cases where there are at least five points to the scale should results be treated as interval scale data and analysed using parametric tests. In this study, with the exception of the question about subjective health, all responses were given using a four-point scale. It was therefore decided that all the data should be treated as ordinal and analysed using non-parametric tests.

5.1.4.2 Baseline assessments

Mann-Whitney tests were carried out to determine any statistically significant differences between Groups One and Two, and Kruskal-Wallis tests were carried out in order to determine if there were any statistically significant differences between the nine different care homes. These were carried out for each of the three dependent variables.

5.1.4.3 Pain

As described in Chapter Four (p. 122), pain intensity was assessed by the VDS and the IPT. Scores from the VDS ranged from 1 (no pain) to 8 (excruciating pain); scores from the IPT ranged from 0 (no pain) to 10 (excruciating pain). The mean baseline scores from both measures are shown in the chart below as well as the frequencies of those who stated that they had no pain. The lower median scores for the IPT are due to the different value attached to 'no pain'. This was '0' whereas the lowest score in the VDS was '1'. Table 5.3 tabulates the baseline data of both pain scales for Groups One and Two.

		Mean	SD	No pain			Mean	SD	No pain
VDS	Group 1 N = 54 Missing values = 1	3.76	2.38	N = 19 17.6%	IPT	Group 1 N = 54 Missing values = 1	2.87	2.83	N = 19 17.6%
	Group 2 N = 50 Missing values = 4	3.06	2.18	N = 23 21.29%		Group 2 N = 50 Missing values = 4	2.33	2.81	N = 22 20.37%
	Total sample N = 108 Missing values = 5	3.41	2.3	N = 42 38.8%		Total sample N = 108 Missing values = 5	2.60	2.82	N = 41 37.9%

TABLE 5:3 BASELINE PAIN INTENSITY SCORES OF GROUPS ONE AND TWO

A Mann-Whitney test was conducted to compare the baseline pain scores in Groups One and Two using both measures. The level of pain intensity was higher in Group One, but there were no statistically significant differences:

VDS: (U = 1223, Z = 1.495, P = 0.135); IPT: (U = 1294, Z = 1.041, P = 0.298)

A Kruskal-Wallis test was conducted to compare the baseline pain scores of each care home using both measures. There were no statistically significant differences in baseline pain scores between the care homes:

VDS: ($\chi^2 = 5.307$, df = 8, P = 0.724); IPT: ($\chi^2 = 985$, df = 8, P = 0.649)

The percentage of those reporting pain was 62%. This is rather lower than figures suggested by Horgas et al. (2007) for this population. They estimate that between 70% and 80% of those in nursing homes experience pain. It should be noted, however, that many of the participants in this sample were receiving residential rather than nursing care. This may explain the reason for the lower percentage. It may also have been the case that there was some under-reporting of pain. Possible reasons for this were suggested in Chapter Two (p.35).

There was a high positive correlation found at baseline between the two measures of assessment, the IPT and the VDS. In Group One: ($r = 0.976$, $N = 54$, $P = 0.000$); in Group Two: ($r = 0.980$, $N = 54$, $P = 0.000$).

5.1.4.4 Anxiety

The items on the adapted assessment scale consisted of both positive and negative statements. The positive items were re-coded so that, for each item of the scale, a low score represented less anxiety and a high score represented more anxiety. Possible scores ranged from a minimum of 11 to a maximum of 44. Responses were made using a four-point Likert scale. The lowest score was 12; the highest was 37. When using the full STAI-Y scale, a cutoff point of 39-40 out of 80 is the official marker of clinically significant problems. An cutoff point suggested for this adaptation was 22. Fifty-six participants scored below the halfway point of 22 and 46 scored above, thus suggesting that 45% of the total sample experienced a noteworthy level of anxiety. This is comparable to the estimate of 44% given by Ames et al. (1994) for the nursing home population.

The baseline levels of anxiety scores together with the mean and standard deviation scores are shown in Table 5.4 below.

	Mean	SD	Below 22	%	22 and above	%
Total sample. <i>N</i> = 102 (11 missing values)	21.34	5.57	56	54	46	45
Group 1 <i>N</i> = 51 (4 missing values)	21.23	5.98	29	28.4	22	21.5
Group 2 <i>N</i> = 51 (7 missing values)	21.45	5.18	27	26.5	24	23.5

TABLE 5:4 BASELINE ANXIETY SCORES OF GROUPS 1 AND 2

A Mann-Whitney test was conducted to compare the baseline scores of anxiety in Groups One and Two. There was no significant difference in the baseline anxiety scores:

($U = 1238$, $Z = 0.42$, $P = 0.678$)

A Kruskal-Wallis test was conducted to compare the baseline scores of anxiety across the care homes. There was no significant difference in baseline anxiety scores between the care homes:

($\chi^2 = 8.16$, $df = 8$, $P = 0.418$)

5.1.4.5 Depression

As with the measure for anxiety, the items on the depression scale consisted of both positive and negative statements. The positive scores were therefore re-coded so that for each item a low score represented less depression and a high score represented more depression. Possible scores ranged from a minimum of eight to a maximum of 32. Each response was coded on a four-point Likert scale. The lowest score was eight, the highest 25. The scoring bands are those recommended by the original scale's authors. Scores of 8-12 fall into the band of no depression; 13-17 mild depression; 18 -22 moderate depression; 23 -32 moderate to severe depression. The baseline levels of depression scores together with the mean and standard deviation scores are shown in the Table 5.5 below.

	Mean	SD	No depression	%	Mild depression	%	Moderate depression	%	Moderate to severe depression	%
Group 1 N = 50 Missing values = 5	13.4	4.11	22	21	18	17	9	8	1	0.9
Group 2 N = 53 Missing values = 5	14.06	3.74	21	20	18	17	13	12	1	0.9
Total sample N = 103 Missing values = 10	13.74	3.92	43	41.7	36	35	22	21	2	1.9

TABLE 5:5 BASELINE DEPRESSION SCORES OF GROUPS 1 AND 2

These figures indicate that 58% of the sample experienced depressive feelings to some degree. Estimates for the prevalence of depression in care homes vary widely as discussed in Chapter Two, (p.27). For example, Quinlan Colwell (2012) gave an estimate of 42% prevalence, but states that some studies show it to be as high as 78%.

A Mann-Whitney test was conducted to compare the baseline scores of depression in Groups One and Two. There was no significant difference in baseline depression scores: ($U = 1168$, $Z = 1.04$, $P = 0.298$)

A Kruskal-Wallis test was conducted to compare the baseline scores of depression across the nine different care homes. There was no significant difference in baseline depression scores: ($\chi^2 = 5.469$, $df = 8$, $P = 0.706$)

5.1.4.6 Pain, anxiety and depression

In order to determine whether levels of pain intensity had any effect on depression and anxiety levels, baseline scores were compared. Pain levels were re-coded to three categories: no pain; just noticeable to moderate pain; strong to excruciating pain. These different categories of pain are shown in Table 5.6 with the corresponding mean scores of anxiety and depression.

Pain level	Anxiety	Depression
No pain	47.46	51.05
Moderate pain	51.12	47.7
Strong pain	59.7	58.39

TABLE 5:6 COMPARISON OF MEAN SCORES OF PAIN, ANXIETY AND DEPRESSION

The table shows that the stronger the pain, the greater the levels of anxiety and depression. However, depression levels only increased when pain was at its strongest; there was no increase in pain for those with moderate levels of depression.

A one-way between groups analysis of variance was also conducted to explore these differences, but they were not statistically significant:

Anxiety: $F = (2, 100) = 1.1, P = 0.327$)

Depression: $F = (2, 99) = 2.3, P = 0.104$)

The relationship between levels of anxiety and depression was investigated using the Spearman correlation coefficient, which showed a strong positive correlation between the two variables: ($r = 0.601, N = 102, P = 0.000$)

Anxiety levels were re-coded into 'high' and 'low'. Mann-Whitney tests showed that levels of depression were consistently higher for those with 'high' scores of anxiety. These reached significance in every week except one, for both Groups One and Two. Scores for the first week are shown below.

Group One, Week 1: ($Z = 2.860, N\text{-Ties} = 17, P = 0.004$)

Group Two, Week 1: ($Z = 173.5, N\text{-Ties} = 19, P = 0.015$)

The relationship between levels of strong to severe pain and anxiety was investigated using the Spearman correlation coefficient, which showed a strong positive correlation between the two variables: ($r = 0.634, N = 25, P = 0.001$)

The relationship between levels of strong to severe pain and depression was investigated using Spearman correlation coefficient. There was a strong positive correlation between the two variables: ($r = 0.634, N = 27, P = 0.001$)

5.1.4.7 Subjective health

Participants rated their health on a five-point Likert scale, one for very poor and five for excellent. Only two participants rated their health as very poor (1 on the Likert scale). The scores were therefore re-coded to aggregate the 'very poor' and 'poor' ratings.

Kruskal-Wallis tests were carried out in order to compare baseline pain, anxiety and depression levels with subjective health assessment. Mean scores are set out in Table 5.7 below. The score of 2 equals a low rating of health; the score of 5 equals a high rating

Subjective health	Pain	Depression	Anxiety
2	63.72	73.45	66.27
3	56.78	47.26	51.18
4	47.18	46.81	50.45
5	41.35	31.79	27.69

TABLE 5:7 COMPARISON OF SUBJECTIVE HEALTH SCORES WITH MEAN SCORES OF PAIN, DEPRESSION AND ANXIETY

The scores show that the lower the rating of subjective health, the higher the levels of pain, depression and anxiety.

There was a statistically significant difference in anxiety scores between the different ratings of subjective health: ($\chi^2 = 17.443$, $df = 3$, $P = 0.001$)

There was a statistically significant difference in depression scores between the different ratings of subjective health: ($\chi^2 = 19.665$, $df = 3$, $P = 0.000$)

Differences in pain scores approached significance ($\chi^2 = 7.402$, $df = 3$, $P = 0.06$)

5.1.4.8 Summary

Baseline tests show that there were no significant differences in levels of pain, depression and anxiety between the nine care homes. Neither were there any significant differences between the three conditions. Levels of pain, depression and anxiety correspond to those of similar populations in other studies. The interaction between the three dependent variables is as predicted from the literature: the more severe the pain, the more severe the depression and anxiety. There was a strong positive correlation between anxiety and depression levels, between strong pain and anxiety and between strong pain and depression. Those who rated their health poorly had greater levels of pain, depression and anxiety.

5.1.5 Results of the music intervention

5.1.5.1 Introduction

Statistical analyses were carried out to evaluate the impact of the music intervention on levels of pain, depression and anxiety on Groups One and Two between the experimental and control conditions.

The results showed that that there were statistically significant *decreases* in levels of pain, anxiety and depression in Group One (experimental) over the course of Intervention One. There were non-significant changes in Group Two (control) with a small *increase* in pain overall.

Results for Intervention Two showed that there were statistically significant *decreases* in levels of anxiety and depression, and a small non-significant *decrease* in pain in Group Two (experimental). There was a statistically significant *increase* in anxiety, a small non-significant *increase* in depression and no change in the levels of reported pain in Group One (control).

The analyses are shown below and are illustrated by graphs showing weekly scores. 'Intervention One' refers to the first experimental period. Assessments were made at the beginning of each week with a final assessment at the end of the third week. In the Figures, this is shown as 'week 4' and coincides with the start of the second experimental period, referred to as 'Intervention Two'. The final assessment is shown in the Figures as 'week 7'.

5.1.5.2 Pain

The impact of the music intervention, evaluated by Wilcoxon tests, was as follows:

Intervention One

There was a statistically significant *decrease* between pre and post-test VDS pain scores in Group One (experimental):

($Z = 2.950$, $N\text{-Ties} = 29$, $P = .003$). Effect size: $d = 0.327$

There was a statistically significant *decrease* between pre and post-test IPT pain scores in Group One (experimental):

($Z = 2.428$, $N\text{-Ties} = 29$, $P = 0.015$). Effect size, $d = 0.310$

There was no decrease between pre and post-test VDS pain scores in Group Two (control):

($Z = .192$, $N\text{-Ties} = 7$, $P = 0.848$)

There was a small, non-significant *decrease* between pre and post-test IPT pain scores in Group Two (control):

($Z = .218$, $N\text{-Ties} = 29$, $P = 0.828$)

These findings are illustrated in the weekly mean scores in Figure 5.8 below.

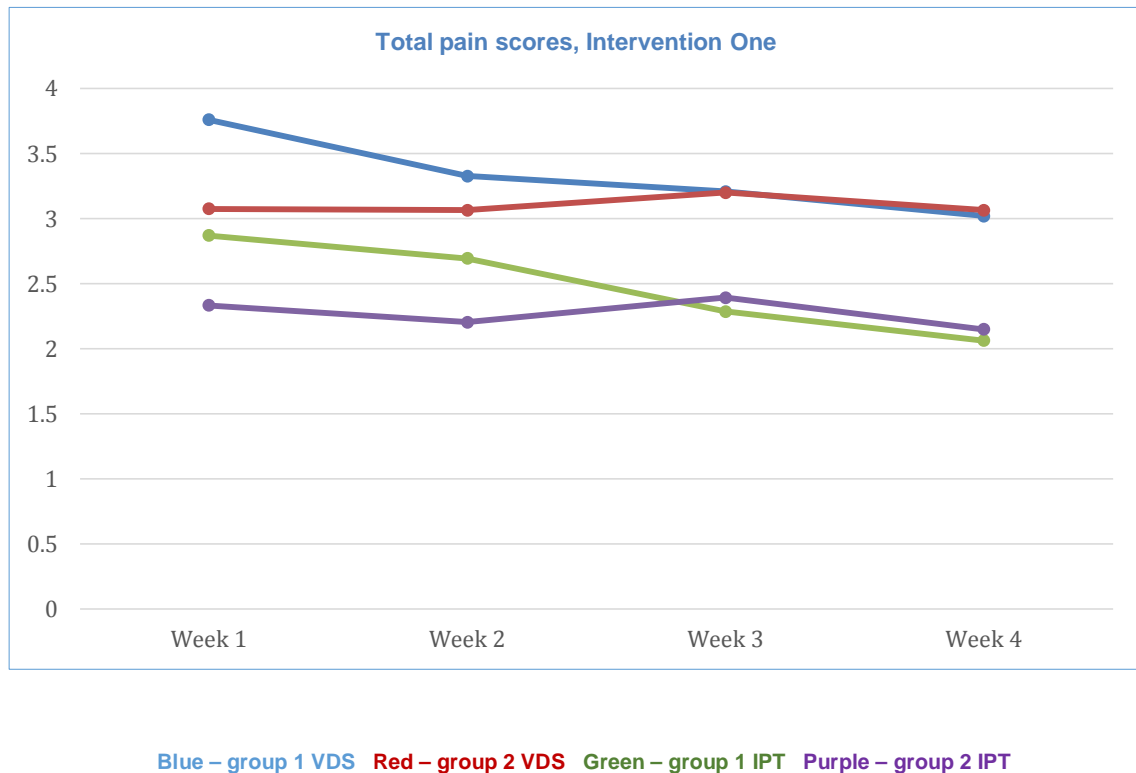


FIGURE 5:8 TOTAL PAIN SCORES, INTERVENTION ONE

In order to evaluate the time needed for the intervention to be effective, Wilcoxon tests were used to analyse the impact of the intervention on the experimental group following two weeks of the intervention. Pre and post-test scores showed a strong decrease between weeks one and three, but neither of the findings (for VDS and IPT) reached significance:

IPT scores were: ($Z = 1.098$, $N\text{-Ties} = 29$, $P = 0.272$)

VDS scores were: ($Z = .965$, $N\text{-Ties} = 26$, $P = 0.075$)

Intervention Two

There was a small, non-significant *decrease* between pre and post-test VDS scores in Group One (control):

($Z = .837$, $N\text{-Ties} = 17$, $P = 0.403$)

There was a small, non-significant *increase* in pain between pre and post-test IPT scores in Group One (control): ($Z = .357$, $N\text{-Ties} = 17$, $P = 0.721$)

There was a non-significant *decrease* between pre and post-test VDS scores in Group Two (experimental): ($Z = 1.504$, $N\text{-Ties} = 12$, $P = 0.133$)

There was a non-significant *decrease* between pre and post-test IPT scores in Group Two (experimental): ($Z = .802$, $N\text{-Ties} = 15$, $P = 0.422$)

As before, the same procedure was carried out to analyse any impact of the intervention between week four and week six. Both scores showed a slight reduction over this period, but neither reached significance.

IPT scores were: ($Z = .024$, $N\text{-Ties} = 18$, $P = 0.981$)

VDS scores were: ($Z = .930$, $N\text{-Ties} = 17$, $P = 0.759$)

The findings are illustrated with the weekly mean rank scores in Figure 5.9 below.

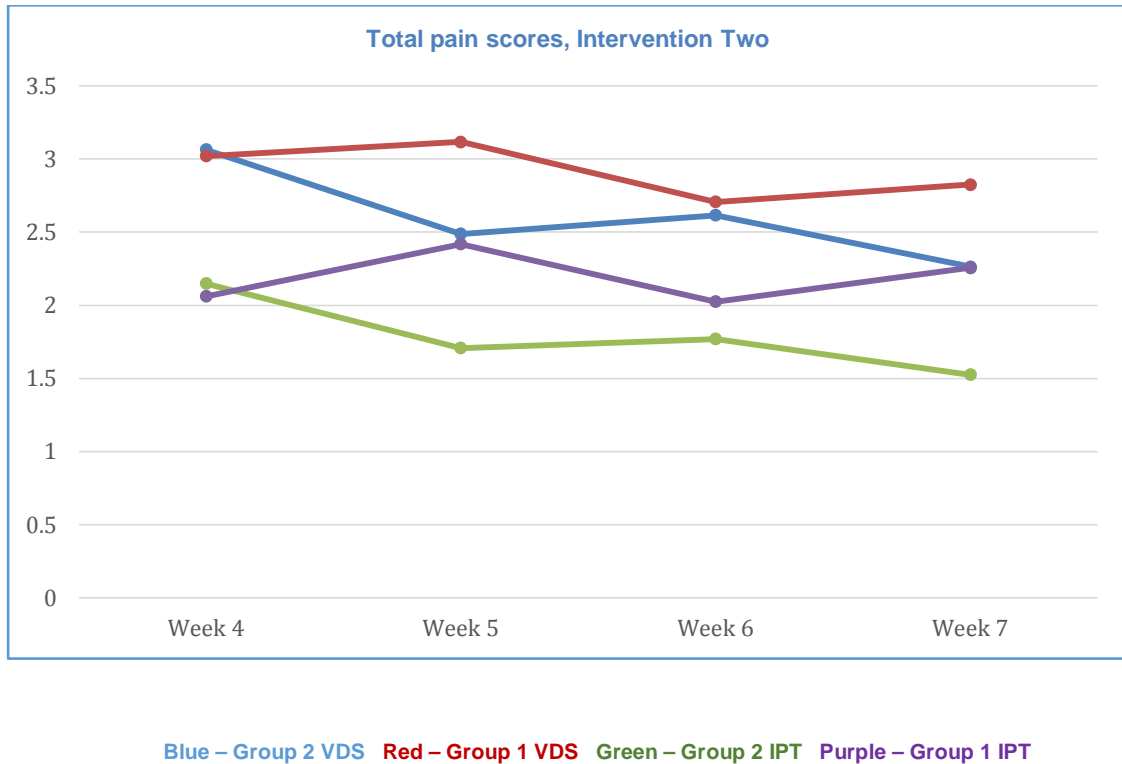


FIGURE 5:9 TOTAL PAIN SCORES, INTERVENTION TWO

In order to determine whether the music intervention was more or less effective for the different degrees of pain, pain values were re-coded from eight to four categories: no pain, just noticeable to weak, mild to strong, severe to excruciating. The analysis showed that there were statistically significant decreases in pain only for those who described their pain levels as being between mild and strong. All other decreases were non-significant:

Intervention One

Mild to strong pain: ($Z = 2.739$, $N\text{-Ties} = 9$, $P = 0.006$)

Intervention Two

Mild to strong pain: ($Z = 2.236$, $N\text{-Ties} = 4$, $P = 0.025$)

An analysis was also carried out to compare the results of those with differing pain levels on any decreases in anxiety and depression. The analysis showed that there were statistically significant decreases in anxiety and depression during Intervention One, and in depression during Intervention Two in those with mild to strong pain, but not for those in the other categories:

Intervention One

Anxiety: ($Z = 3.1$, $N\text{-Ties} = 21$, $P = 0.002$)

Depression: ($Z = 2.702$, $N\text{-Ties} = 21$, $P = 0.007$)

Intervention Two

Depression: ($Z = 2.952$, $N\text{-Ties} = 11$, $P = 0.003$)

These findings show that the music intervention had a significant impact on the reduction of pain in Group One (experimental) during Intervention One. Although there were weekly reductions, these did not achieve statistical significance until the final week. There were also reductions in Group Two (control) during Intervention Two but these were not found to be significant. Decreases in extreme pain levels did not reach significance and indicates that the music was less effective in those with high levels of pain.

5.1.5.3 Anxiety

Intervention One

The impact of the music intervention, evaluated by Wilcoxon tests, was as follows:

There was a statistically significant *decrease* between the pre and post-test scores of total anxiety for Group One (experimental): ($Z = 4.448$, $N\text{-Ties} = 42$, $P = 0.000$). Effect size: $d = 0.667$

There was no significant change between the pre and post-test scores of total anxiety for Group Two (control): ($Z = 2.91$, $N\text{-Ties} = 36$, $P = 0.771$)

Wilcoxon tests were used to analyse any impact of the intervention for the two-week period between week one and week three and showed a statistically significant reduction:

($Z = 3.567$, $N\text{-Ties} = 40$, $P = 0.000$)

These findings are shown below in Figure 5.10 below, using the weekly mean rank scores:

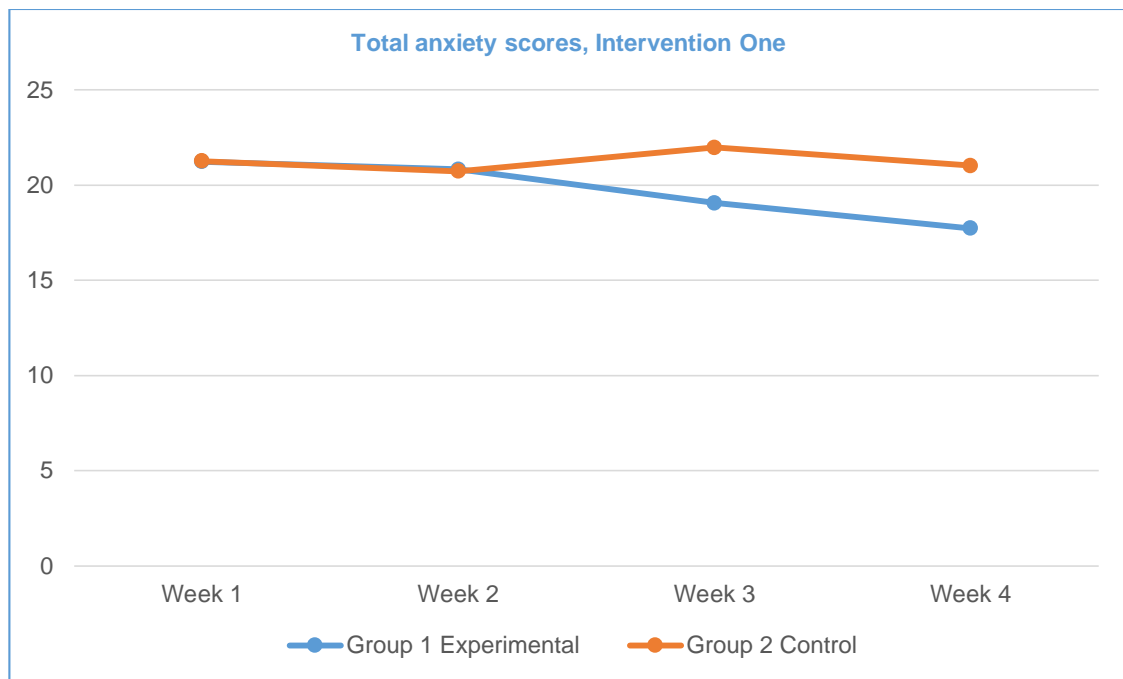


FIGURE 5:10 TOTAL ANXIETY SCORES, INTERVENTION ONE

Intervention Two

There was a statistically significant *decrease* between the pre and post-test total anxiety scores of Group Two (experimental): ($Z = 3.724$, $N\text{-Ties} = 32$, $P = 0.000$). Effect size: $d = 0.653$.

There was a statistically significant *increase* between the pre and post-test total anxiety scores of Group One (control): ($Z = 2.559$, $N\text{-Ties} = 36$, $P = 0.01$)

Wilcoxon tests were used to analyse any impact of the intervention on the experimental Group Two for the two-week period between week 4 and week 6. There was a statistically significant reduction in levels of anxiety: ($Z = 3.939$, $N\text{-Ties} = 33$, $P = 0.000$)

These findings are shown in Figure 5.11 below, using the weekly mean rank scores:

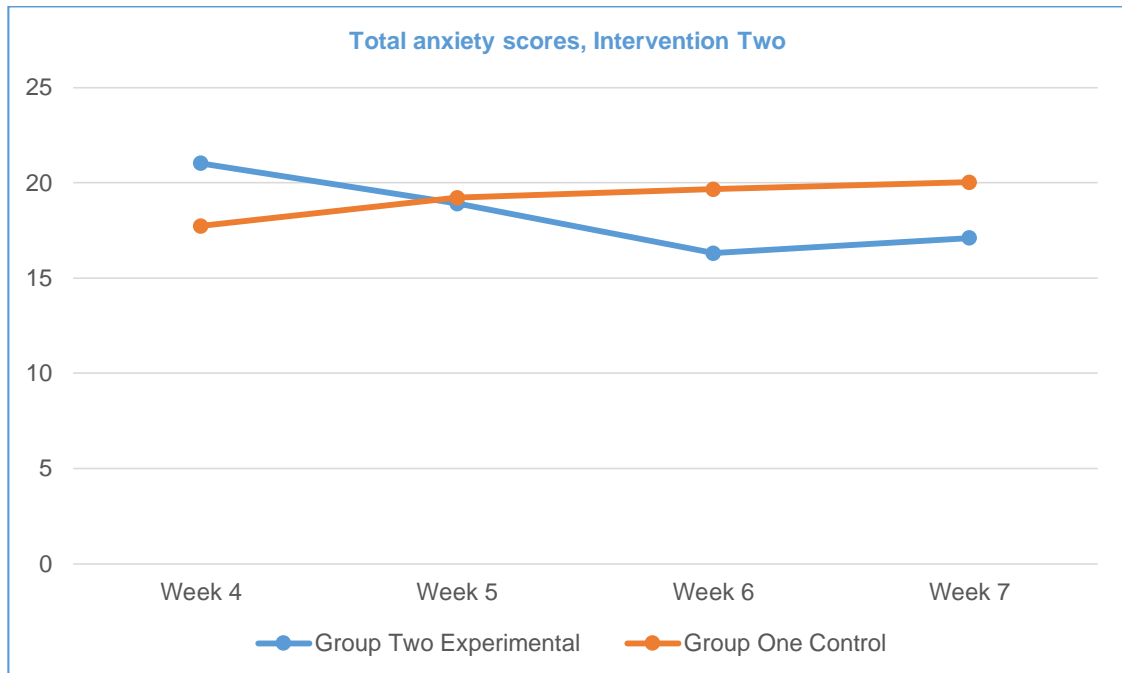


FIGURE 5:11 TOTAL ANXIETY SCORES, INTERVENTION TWO

These results demonstrate that the music intervention had a significant impact on the anxiety levels in Group One (experimental) both over the full three-week research period and also over a two-week period. No significant change was found in Group Two (control) over the three-week period. A significant reduction was also found in Group Two (experimental) for both the two and three-week periods. There was a significant *increase* for Group One (control) over the three-week period.

In order to evaluate the items of the assessment scale most affected by the music intervention, an analysis was conducted on each individual item. As before, these were evaluated using Wilcoxon tests.

Of the eleven questions included in the assessment scale, statistically significant *decreases* were found for the following seven items in Group One (experimental). The results are detailed below.

Nervous: ($Z = 2.981$, $N\text{-Ties} = 18$, $P = 0.003$)

Irritable: ($Z = 3.72$, $N\text{-Ties} = 19$, $P = 0.000$)

Anxious: ($Z = 2.095$, $N\text{-Ties} = 23$, $P = 0.036$)

Relaxed: ($Z = 1.958$, $N\text{-Ties} = 24$, $P = 0.050$)

Worried: ($Z = 3.155$, $N\text{-Ties} = 20$, $P = 0.002$)

Satisfied: ($Z = 2.019$, $N\text{-Ties} = 21$, $P = 0.043$)

Looking forward: ($Z = 3.091$, $N\text{-Ties} = 24$, $P = 0.002$)

There were no statistically significant changes found for the same items during the same period for Group Two (control). During Intervention Two, statistically significant *decreases* were found for the following five variables in Group Two (experimental):

Relaxed: ($Z = 2.953$, $N\text{-Ties} = 23$, $P = 0.030$)

Satisfied: ($Z = 2.351$, $N\text{-Ties} = 17$, $P = 0.019$)

Irritable: ($Z = 2.486$, $N\text{-Ties} = 10$, $P = 0.013$)

Anxious: ($Z = 2.676$, $N\text{-Ties} = 14$, $P = 0.007$)

Energy: ($Z = 2.828$, $N\text{-Ties} = 15$, $P = 0.005$)

Over the same period, statistically significant *increases* were found for the following four variables in Group One (control).

Relaxed: ($Z = 2.179$, $N\text{-Ties} = 25$, $P = 0.029$)

Nervous: ($Z = 2.321$, $N\text{-Ties} = 10$, $P = 0.020$)

Irritable: ($Z = 2.539$, $N\text{-Ties} = 10$, $P = 0.011$)

Worried: ($Z = 2.372$, $N\text{-Ties} = 17$, $P = 0.018$)

These results indicate that some items were more affected by the music intervention than others. Feelings of relaxation, satisfaction, irritability and anxiety all showed significant improvements in both intervention periods. There were three that showed no significant changes: calmness, loneliness and boredom.

5.1.5.4 Depression

Intervention One

The impact of the music intervention on total depression levels, evaluated by Wilcoxon tests, was as follows:

There was a statistically significant *decrease* between the pre- and post-test total depression scores of Group One (experimental):

($Z = 3.484$, $N\text{-Ties} = 38$, $P = 0.000$). Effect size: $d = 0.623$

There was a small, non-significant *decrease* between the pre- and post-test total depression scores of Group Two (control):

($Z = .152$, $N\text{-Ties} = 29$, $P = 0.879$)

Wilcoxon tests were used to analyse any impact of the intervention for the two-week period between week one and week three, and showed a statistically significant reduction:

($Z = 2.802$, $N\text{-Ties} = 37$, $P = 0.005$)

These findings are shown in Figure 5.12 below.

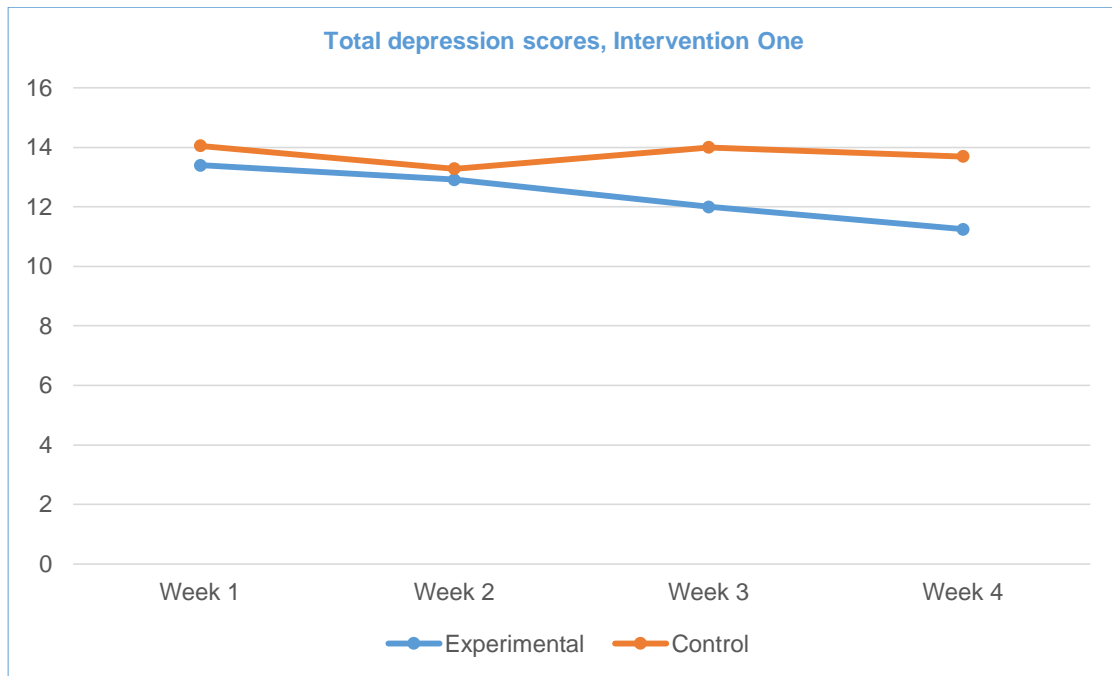


FIGURE 5:12 TOTAL DEPRESSION SCORES, INTERVENTION ONE

Intervention Two

There was a statistically significant *decrease* between the pre- and post-test total depression scores of Group Two (experimental): ($Z = 3.917$, $N\text{-Ties} = 32$, $P = 0.000$). Effect size: $d = 0.7364$.

There was a non-significant *increase* between the pre and post-test total depression scores of Group One (control): ($Z = 1.355$, $N\text{-Ties} = 26$, $P = 0.176$)

The same procedure was carried out to analyse any impact of the intervention over the two-week period between week four and week six, and showed a statistically significant reduction:

($Z = 3.258$, $N\text{-Ties} = 30$, $P = 0.001$)

These findings are shown in Figure 5.13 below.

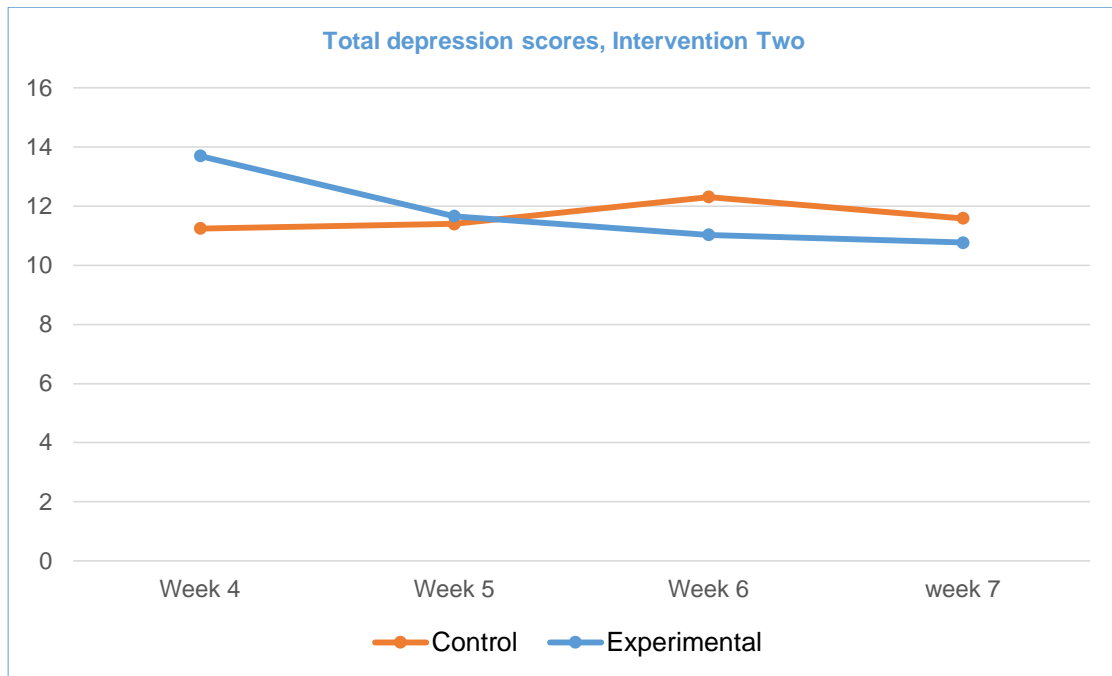


FIGURE 5:13 TOTAL DEPRESSION SCORES, INTERVENTION TWO

These results show that the music intervention had a statistically significant impact on the reduction of depression levels in Group One (experimental) both over the full three-week research period and also over a two-week period within that. There was a small non-significant decrease in Group Two (control) over the same period. There was a statistically significant decrease in depression levels in Group Two (experimental) for both the two and three-week periods and a small increase of scores in Group One (control). There was very little change in the lower scores throughout the six weeks.

In addition to the analysis of pre- and post-test total depression scores, an analysis was also conducted on the individual items of the depression assessment scale. This was in order to evaluate which individual variables were most affected by the music intervention. Wilcoxon tests were used.

Of the eight items included in the assessment scale, statistically significant *decreases* were found for the following three variables in Group One (experimental) during Intervention One:

Bothered by small things: ($Z = 3.488$, $N\text{-Ties} = 23$, $P = 0.000$)

Tired: ($Z = 3.724$, $N\text{-Ties} = 24$, $P = 0.036$)

Poor concentration: ($Z = 2.096$, $N\text{-Ties} = 17$, $P = 0.036$)

The findings for 'feeling depressed or low' approached significance: ($Z = 1.897$, $N\text{-Ties} = 19$, $P = 0.058$)

A statistically significant decrease was also found for one question during the same period in Group Two (control):

Bothered by small things: ($Z = 1.994$, $N\text{-Ties} = 18$, $P = 0.046$)

Of the eight items, statistically significant decreases were found for three items during Intervention Two for Group Two (experimental):

Sleep: ($Z = 2.344$, $N\text{-Ties} = 18$, $P = 0.019$)

Tired: ($Z = 2.236$, $N\text{-Ties} = 14$, $P = 0.025$)

Cheerful: ($Z = 3.508$, $N\text{-Ties} = 20$, $P = 0.000$)

There were no statistically significant findings for any of the items during Intervention Two for those in Group One (control).

These additional findings show that some variables were more affected by the music intervention than others. The greatest effect was found in levels of tiredness.

5.1.6 The longitudinal effects of the intervention

To answer the research question, 'To what extent do the positive effects of music continue after the three-week period is over?', an analysis was carried out on the findings from all three dependent variables (pain, depression and anxiety) of Group One during the second research period.

A Wilcoxon test showed that there was a statistically significant *decrease* in anxiety during Intervention One: ($Z = 4.448$, $N\text{-Ties} = 42$, $P = 0.000$) and a statistically significant *increase* during Intervention Two ($Z = 2.559$, $N\text{-Ties} = 36$, $P = 0.010$).

There was a statistically significant *decrease* in depression between during Intervention One ($Z = 3.484$, $N\text{-Ties} = 38$, $P = 0.000$) and no significant decrease during Intervention Two ($Z = 3.917$, $N\text{-Ties} = 26$, $P = 0.176$).

There was a statistically significant *decrease* in pain during Intervention One when measured by the VDS ($Z = 2.950$, $N\text{-Ties} = 29$, $P = 0.003$) and when measured by the IPT ($Z = 2.428$, $N\text{-Ties} = 29$, $P = 0.015$) but no significant decrease during Intervention Two. VDS: ($Z = 403$, $N\text{-Ties} = 17$, $P = 0.403$). IPT: ($Z = 721$, $N\text{-Ties} = 17$, $P = 0.721$).

This demonstrates that levels of pain, depression and anxiety did not continue to improve once the music listening intervention had come to an end; on the contrary, scores increased during the three weeks following the intervention; in the case of anxiety, the increase was statistically significant. However, none of them returned to the original baseline scores. To show the pattern of change, the mean scores on each dependent variable taken at baseline, after the three-week music intervention and at the completion of the second research period of Group One are shown in Figure 5: 14 below.

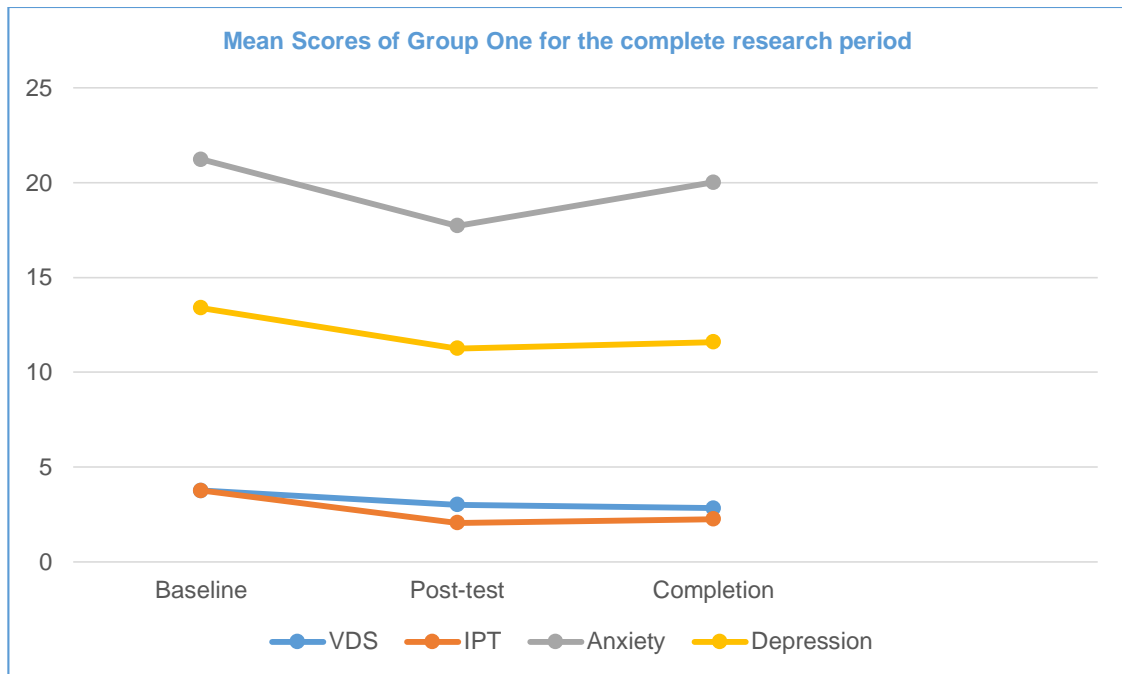


FIGURE 5:14 MEAN SCORES OF GROUP ONE FOR COMPLETE RESEARCH PERIOD

This Figure illustrates the baseline decreases of pain, depression and anxiety during Intervention One, and also shows the changes in scores after the period of music listening. Although all show increases (with the exception of the VDS scores), none return to the original baseline scores. These findings therefore suggest that, although there was no continuing change, there was some residual effect in that scores did not immediately revert back, but showed an incremental increase. This was particularly evident in levels of anxiety.

5.1.7 Additional analyses

Further analyses were carried out to explore what impact, if any, the different demographic variables such as gender and age had on the baseline levels of the three dependent variables and upon the results of the music intervention.

5.1.7.1 Gender

One of the high-risk factors that has been identified for the onset of anxiety in older people is being female (de Beurs et al. 2000). To examine if greater female anxiety was a characteristic of this sample, the baseline levels of the total anxiety scores of each gender were compared. This was followed by a comparison of the subsequent weekly total anxiety scores for the complete six-week research period. Mann-Whitney tests were used for both analyses. There were 31 males and 82 females.

As already stated, items were re-coded so that for each item of the scale, a low score represented less anxiety and a high score represented more anxiety. Although females showed consistently higher levels of anxiety than the males throughout the six-week research period, as shown in Figure 5.15 below, there was no statistically significant overall difference in anxiety levels between the two genders.

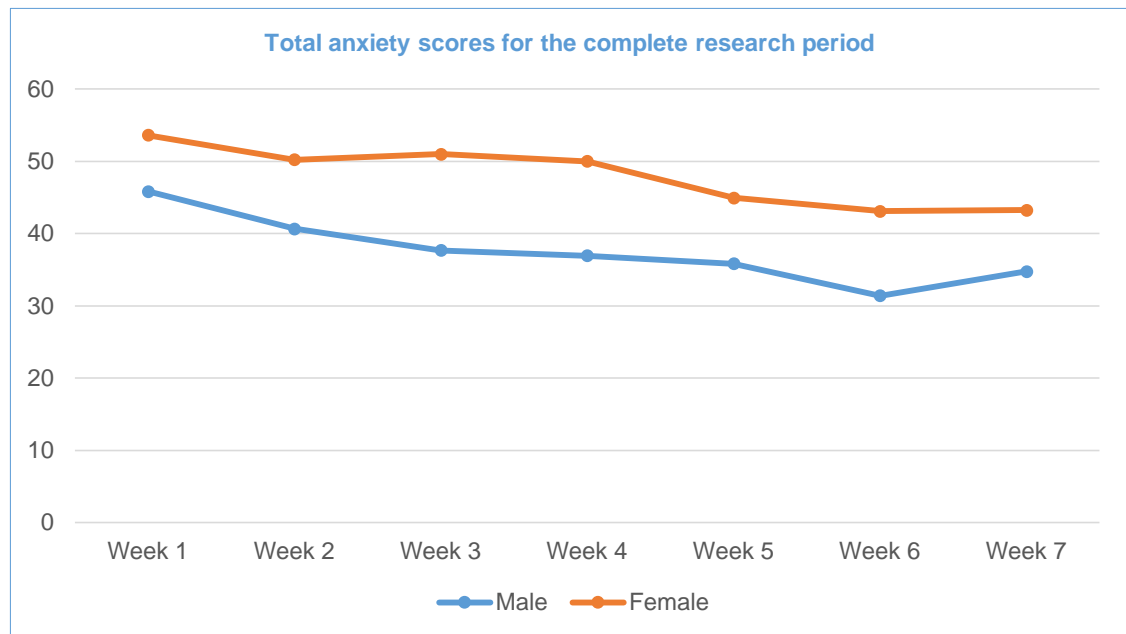


FIGURE 5:15 TOTAL ANXIETY SCORES FOR THE COMPLETE RESEARCH PERIOD

However, the differences between the mean anxiety scores of males and females reached statistical significance in weeks three, four and six:

Week Three: ($U = 649$, $Z = 2.191$, $P = 0.028$)

Week Four: ($U = 628$, $Z = 2.19$, $P = 0.029$)

Week Six: ($U = 453$, $Z = 2.114$, $P = 0.034$)

Analyses were then carried out to investigate any gender differences within the individual items of the anxiety assessment schedule. Of the eleven questions, males showed consistently lower weekly scores on eight of them. In all of the items analysed, whether regarding positive or negative responses (e.g. calmness or irritability) lower scores equate to lower levels of overall anxiety.

A Mann-Whitney test was carried out to explore any differences in response between the genders as to their feelings of anxiety. There was no statistically significant baseline difference between the two genders but females showed consistently higher levels of feelings of anxiety than males throughout the six-week research period and are shown in Figure 5.16 below.

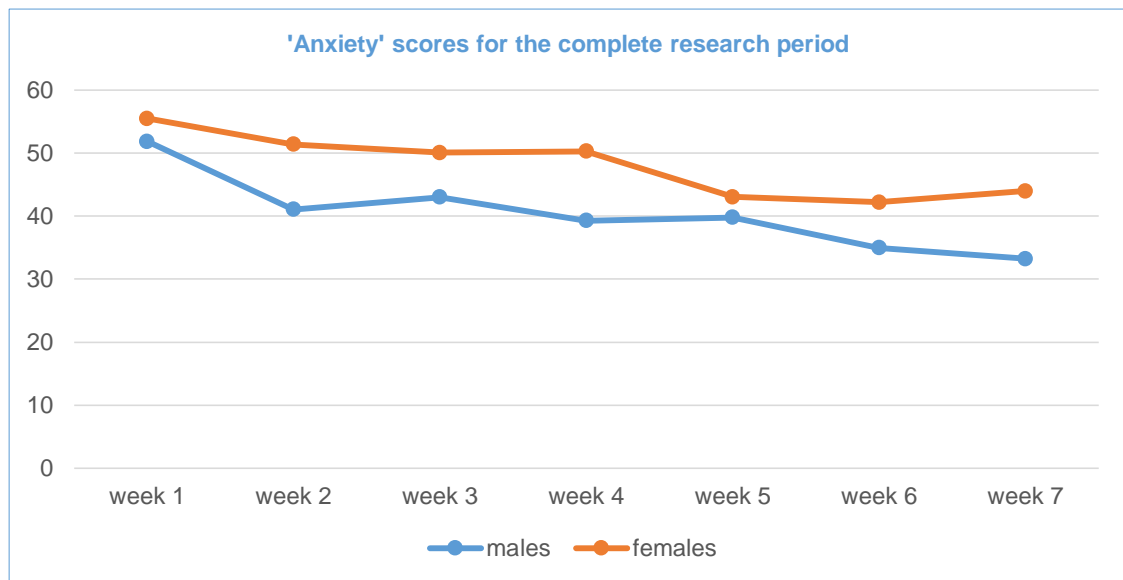


FIGURE 5:17 'ANXIETY' SCORES FOR MALES AND FEMALES

These differences reached significance in week four: ($U = 694$, $Z = 2.041$, $P = .041$) and in week seven: ($U = 513$, $Z = 2.277$, $P = .023$)

A Mann-Whitney test was carried out to explore any differences in response between the genders regarding whether they felt 'relaxed'. There was no statistically significant baseline difference between the two genders but females showed consistently lower levels of relaxation than males throughout the six-week research period and are shown in Figure 5.17 below.

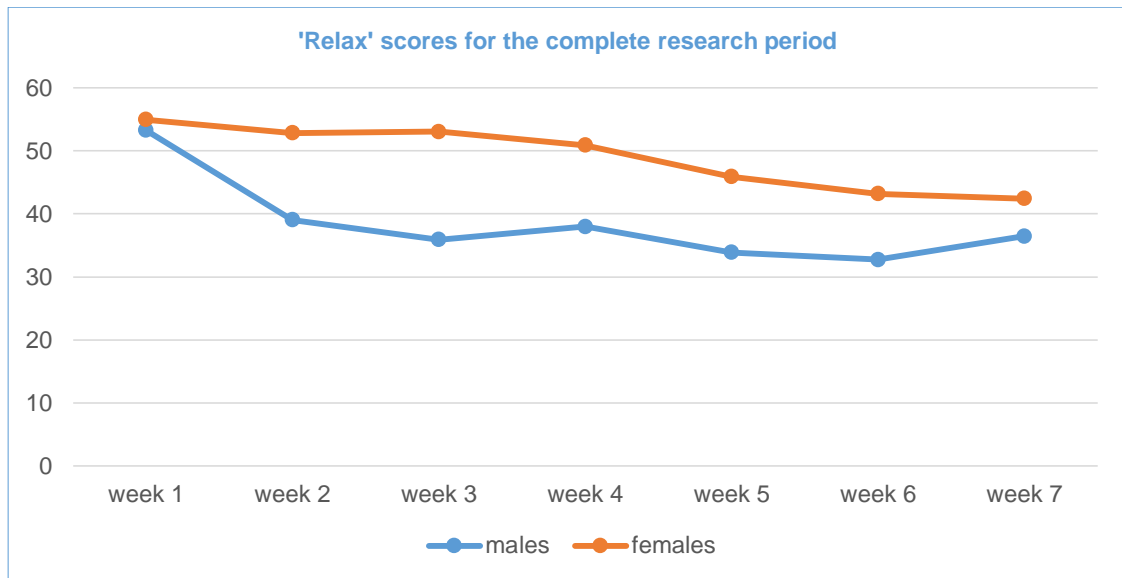


FIGURE 5:18 'RELAXED' SCORES FOR MALES AND FEMALES

These differences reached significance in week two, three, four, five and six:

Week Two: ($U = 676.5$, $Z = 2.344$, $P = 0.019$)

Week Three: ($U = 600$, $Z = 2.914$, $P = 0.004$)

Week Four: ($U = 658$, $Z = 2.236$, $P = 0.025$)

Week Five: ($U = 536.5$, $Z = 2.263$, $P = 0.024$)

Week Six: ($U = 485.5$, $Z = 2.068$, $P = 0.039$)

A Mann-Whitney test was carried out to explore any differences in response between the genders as to whether they felt 'satisfied'. There was no statistically significant baseline difference between the two genders but females showed consistently lower levels of 'feeling satisfied' than males throughout the six-week research period and these are shown in Figure 5.18 below.

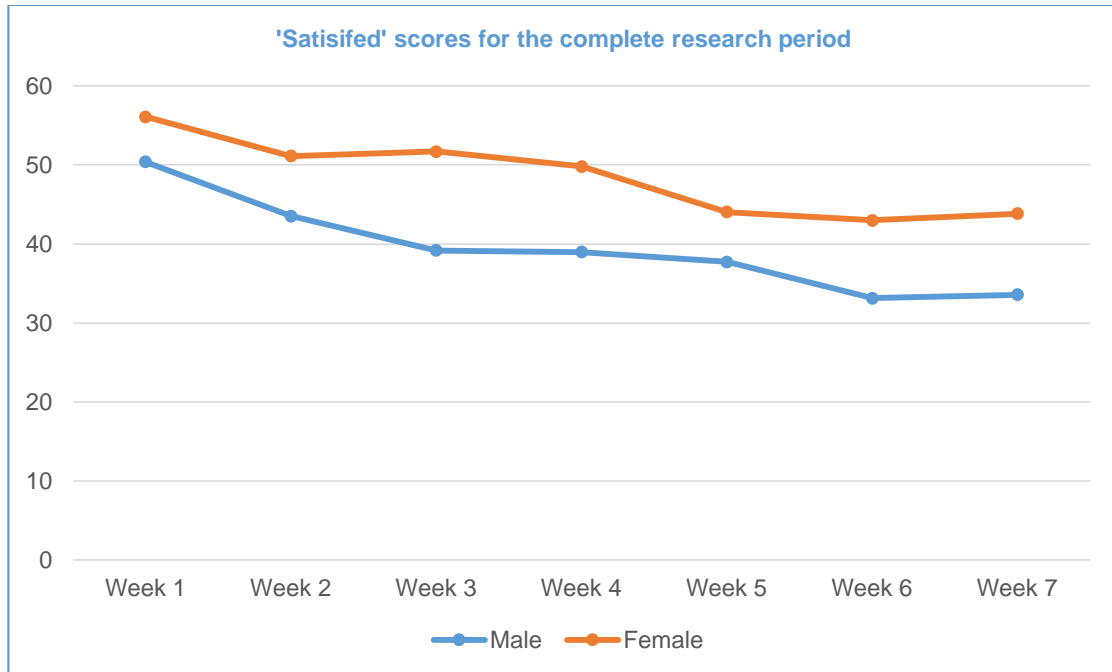


FIGURE 5:19 'SATISFIED' SCORES FOR MALES AND FEMALES

Differences reached significance in week three: ($U = 690$, $Z = 2.132$, $P = 0.03$). A Mann-Whitney test was carried out to explore any differences in response between the genders as to whether they felt 'calm'. There was no statistically significant baseline difference between the two genders but females showed consistently lower levels of feeling 'calm' than males throughout the six-week research period and are shown in Figure 5.19 below.

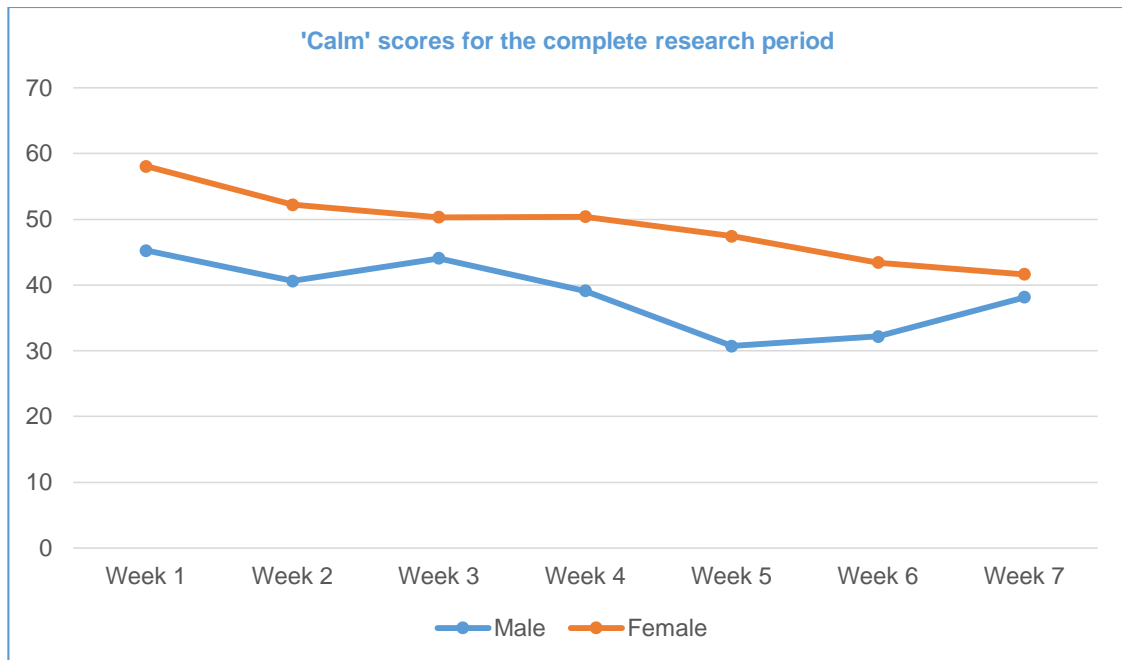


FIGURE 5:20 'CALM' SCORES FOR MALES AND FEMALES

These differences reached significance in weeks one, two, four, five and six:

Week One: ($U = 892.5$, $Z = 2.099$, $P = 0.036$)

Week Two: ($U = 689.5$, $Z = 1.975$, $P = 0.047$)

Week Four: ($U = 689.5$, $Z = 1.975$, $P = 0.048$)

Week Five: ($U = 451.5$, $Z = 3.223$, $P = 0.001$)

Week Six: ($U = 472$, $Z = 2.205$, $P = 0.027$)

A Mann-Whitney test was carried out to explore any differences in response between the genders as to whether they 'looked forward' to things. It revealed that for each week female scores showed

lower levels of 'looking forward'. These differences reached significance in week six: ($U = 463$, $Z = 2.133$, $P = 0.033$) and are shown in Figure 5.20 below.

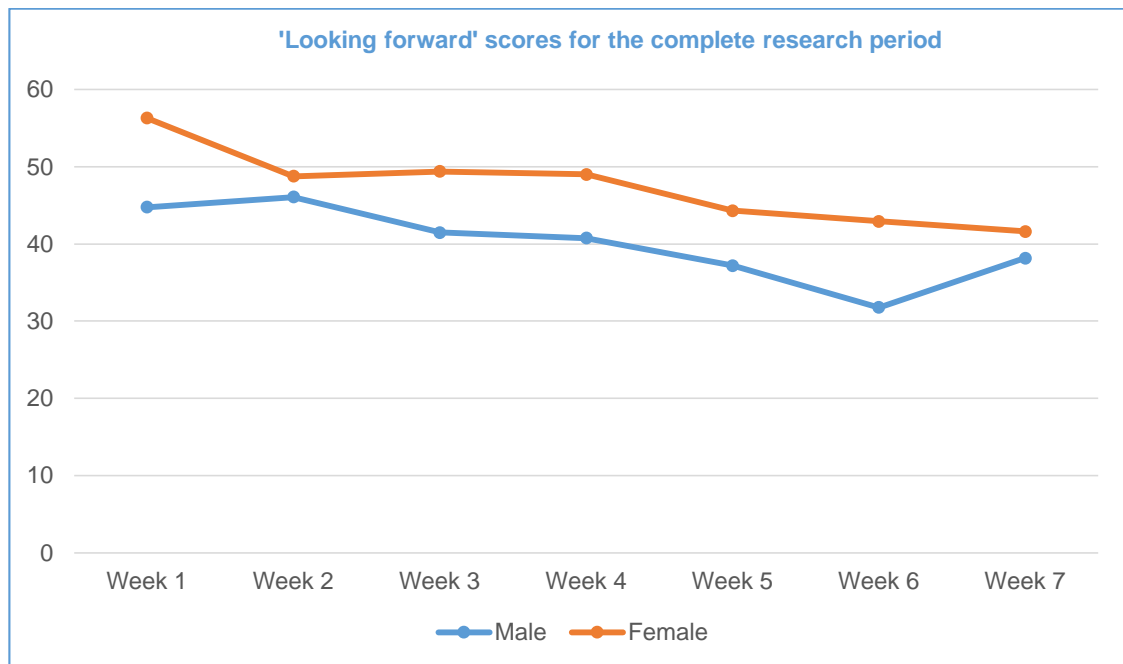


FIGURE 5:21 'LOOKING FORWARD' SCORES FOR MALES AND FEMALES

These findings indicate that there were consistent differences, sometimes significant, sometimes not, in total anxiety scores between the genders throughout the six-week research period. Overall, in eight of the eleven items included in the assessment of anxiety, females were more anxious than males. The item that showed the least difference between the genders was in response to the question, 'do you feel irritable?' Scores were not widely divergent, and in week three males reported feeling slightly more 'irritable' than females. Questions relating to boredom, loneliness and energy showed no gender differences.

Similar analyses were carried out to explore any differences between the genders in the reporting of subjective health, pain and depression. No statistically significant differences were found either at

the baseline measurement or in the subsequent weeks. Neither did one gender show any consistent trend for having higher or lower levels of either pain or depression.

In addition to the analysis of comparative individual items in the assessment of anxiety between the genders, an analysis was also carried out to explore the impact of the music intervention on total anxiety levels in each gender. Wilcoxon tests were used for each.

Intervention One

There was a statistically significant *decrease* in the total anxiety scores of females in Group One (experimental period): ($Z = 3.466$, $N\text{-Ties} = 29$, $P = 0.001$)

There was a statistically significant *decrease* in the total anxiety scores of males in Group One (experimental): ($Z = 2.842$, $N\text{-Ties} = 13$, $P = 0.004$)

Intervention Two

There was a statistically significant *decrease* in the total anxiety scores of females in Group Two (experimental): ($Z = 3.195$, $N\text{-Ties} = 24$, $P = 0.001$)

There was a non-significant *decrease* in the total anxiety scores of males in Group Two (experimental).

No statistical difference was found for either gender from Group One (control period).

These findings indicate that despite the initial differences between the genders in total anxiety levels, the music intervention was successful in reducing anxiety in both, although the finding for males in Group Two was non-significant.

5.1.7.2 Age

Given that the ages of the participants ranged from 70 to 101 (with one outlier, aged 59), there was the possibility of a difference of intervention effect between participants of the lower and higher age ranges. In order to explore this possibility, the variable 'age' was re-coded into two groups: those below the median age of 87 ($N = 51$), and those above ($N = 58$).

A Mann-Whitney test was conducted to determine any baseline differences in pain, depression or anxiety between the higher and lower age groups. None were found.

Wilcoxon tests were conducted to evaluate the effects of the intervention on the higher and lower age groups respectively. There were no statistically significant differences in pain levels in either Groups One or Two in those *under* the age of 87. However, for those *over* the age of 87, there was a statistically significant decrease in pain in Group One during Intervention One (experimental): $Z = 2.741$, $N\text{-Ties} = 16$, $P = 0.006$. There was also a non-significant decrease during Intervention Two (control).

For those *over* 87 in Group Two, there was a non-significant increase in pain during Intervention One (control). This was followed by a statistically significant decrease in pain during Intervention Two (experimental): ($Z = 2.023$, $N\text{-Ties} = 5$, $P = 0.043$)

These findings are shown in Figures 5.21 and 5.22 below.

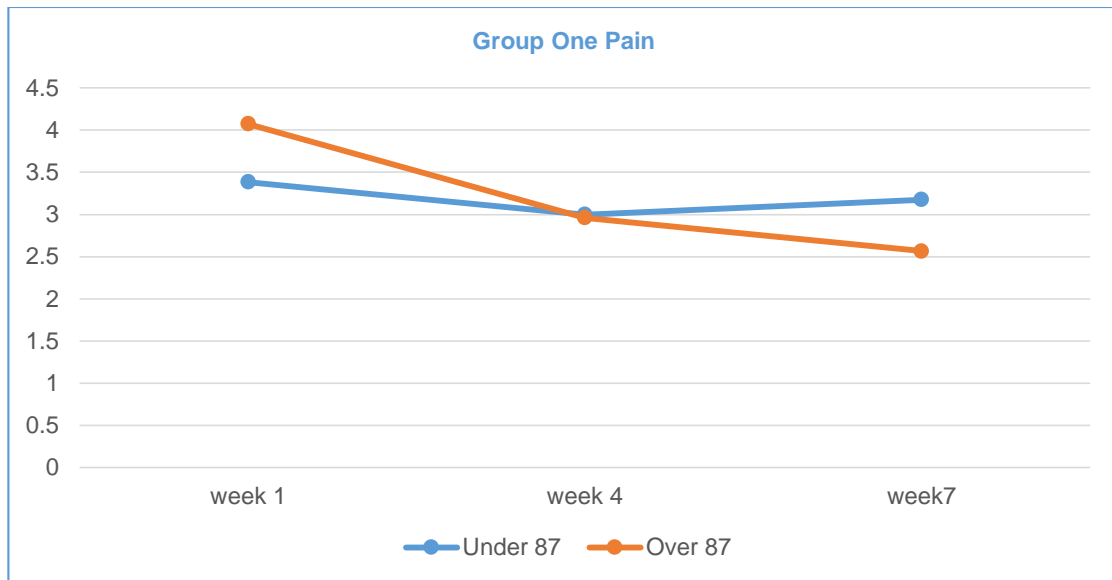


FIGURE 5:22 OVER AND UNDER 87S PAIN SCORES, GROUP ONE

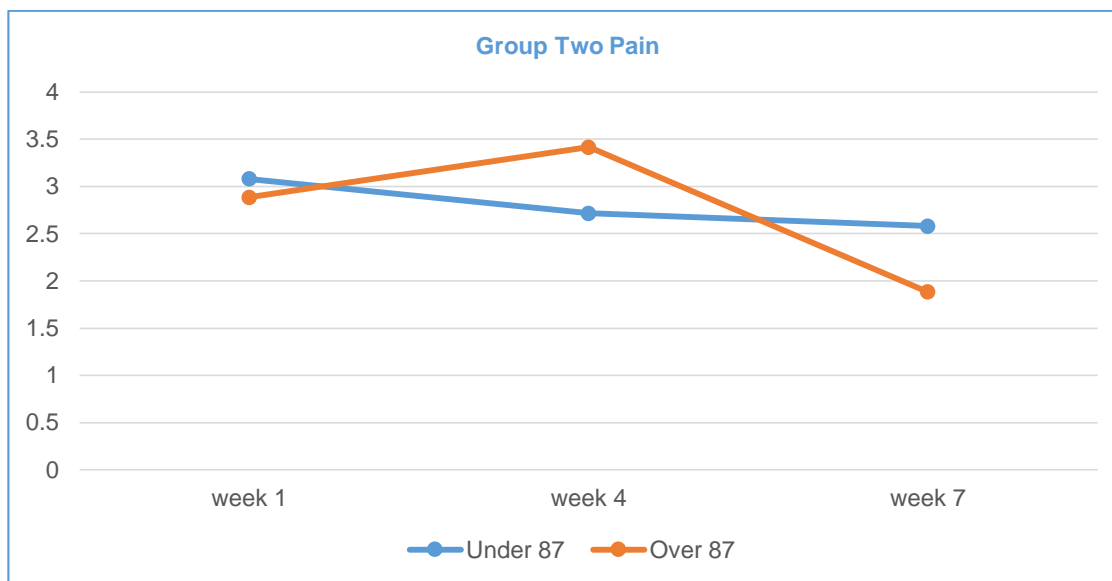


FIGURE 5:23 OVER AND UNDER 87S PAIN SCORES, GROUP TWO

These findings indicate that the effects of the music intervention were more marked in the older age group, with a significant decrease in pain levels in both Groups One and Two. The findings for those under the age of 87 were non-significant.

Wilcoxon tests were conducted to evaluate any differences between the anxiety levels of the two age groups as a result of the music intervention. For Group One, there were significant decreases in anxiety during Intervention One in both age groups:

Those under 87: ($Z = 3.182$, $N\text{-Ties} = 20$, $P = 0.001$)

Those over 87: ($Z = 3.379$, $N\text{-Ties} = 21$, $P = 0.001$)

This was followed by increases in anxiety during the control period. In those over 87, this increase reached significance: ($Z = 2.683$, $N\text{-Ties} = 21$, $P = 0.007$). These findings are illustrated in Figure 5.23 below.

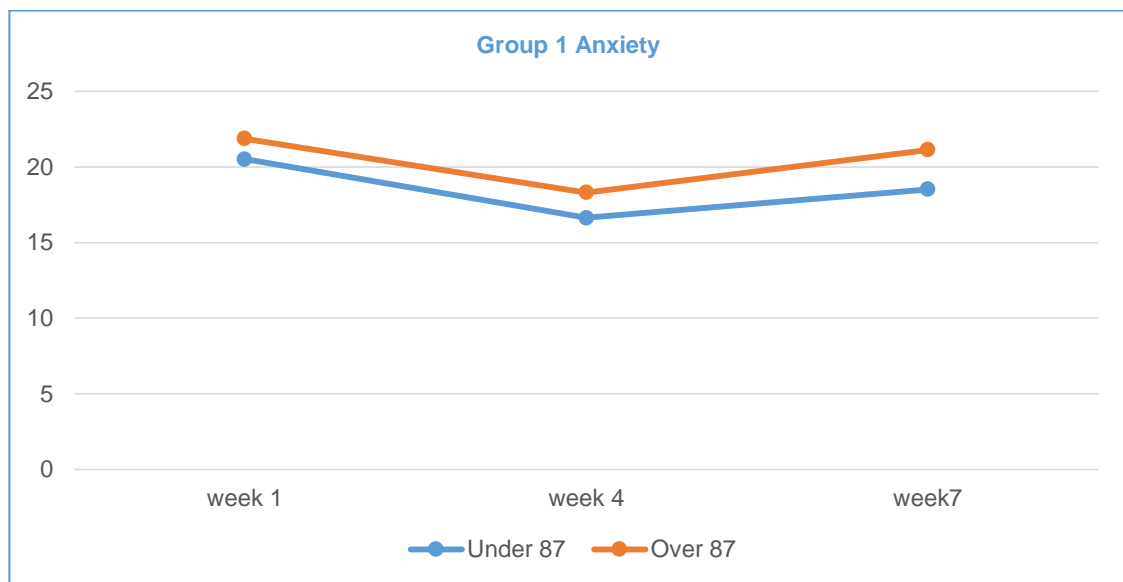


FIGURE 5:24 OVER AND UNDER 87S ANXIETY SCORES, GROUP ONE

The findings for Group Two showed statistically significant decreases in anxiety during Intervention Two for both age groups. However, a Mann-Whitney test showed that there was a significant difference between the two age groups at the start of the music intervention for the second research period: ($U = 127$, $Z = 2.172$, $P = .030$). This is shown in Figure 5.24 below. As already stated, there was no significant difference between the two age groups at the start of the intervention. Throughout the research period, those over 87 had lower levels of anxiety.

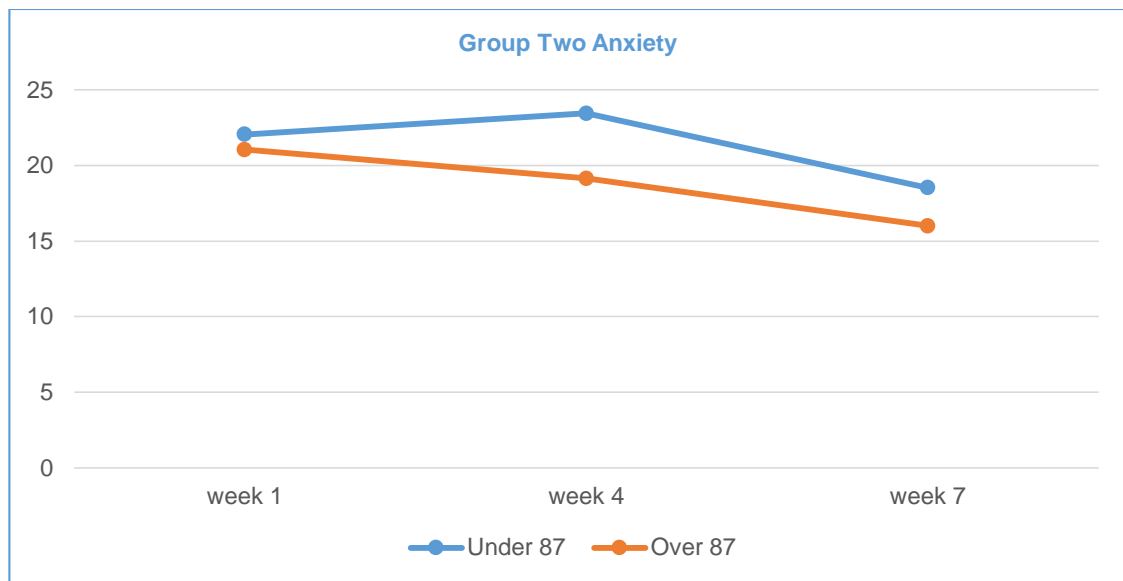


FIGURE 5:25 OVER AND UNDER 87S ANXIETY SCORES, GROUP TWO

Wilcoxon tests were also conducted to evaluate the effect of the interventions on the depression levels of the two age groups. There were statistically significant decreases in depression for both age groups in Group One during Intervention One:

Those under 87: ($Z = 1.964$, $N\text{-Ties} = 18$, $P = 0.049$)

Those over 87: ($Z = 2.831$, $N\text{-Ties} = 21$, $P = 0.005$)

The findings are shown in Figure 5.25 below.

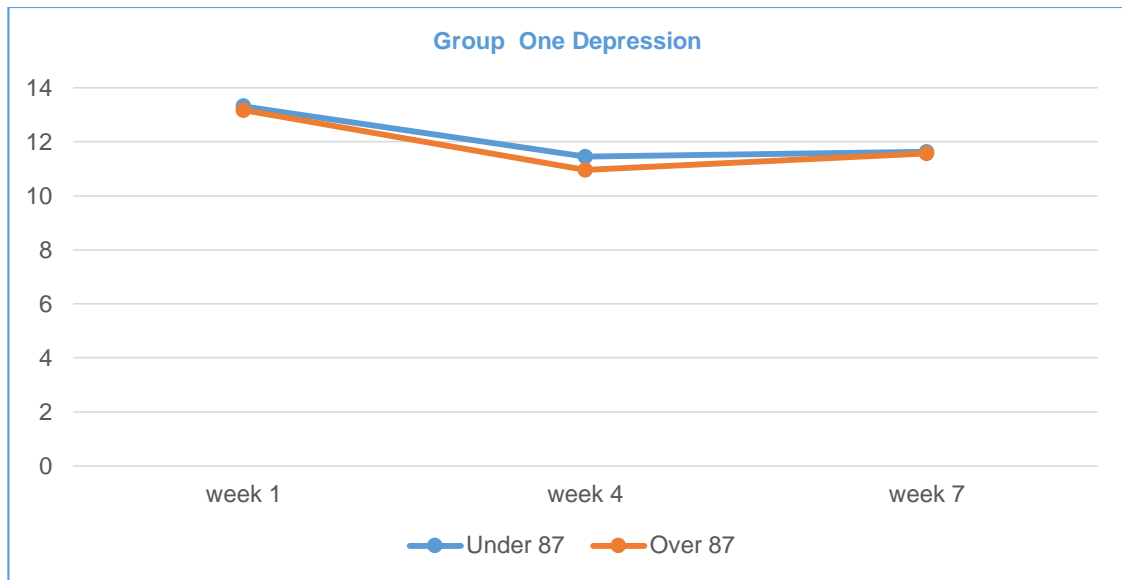


FIGURE 5:26 OVER AND UNDER 87S DEPRESSION SCORES, GROUP ONE

Findings for Group Two showed similar results. There was no change in depression, with levels remaining static during the control period and showing a statistically significant reduction during Intervention Two for both age groups, as shown in Figure 5:25 below.

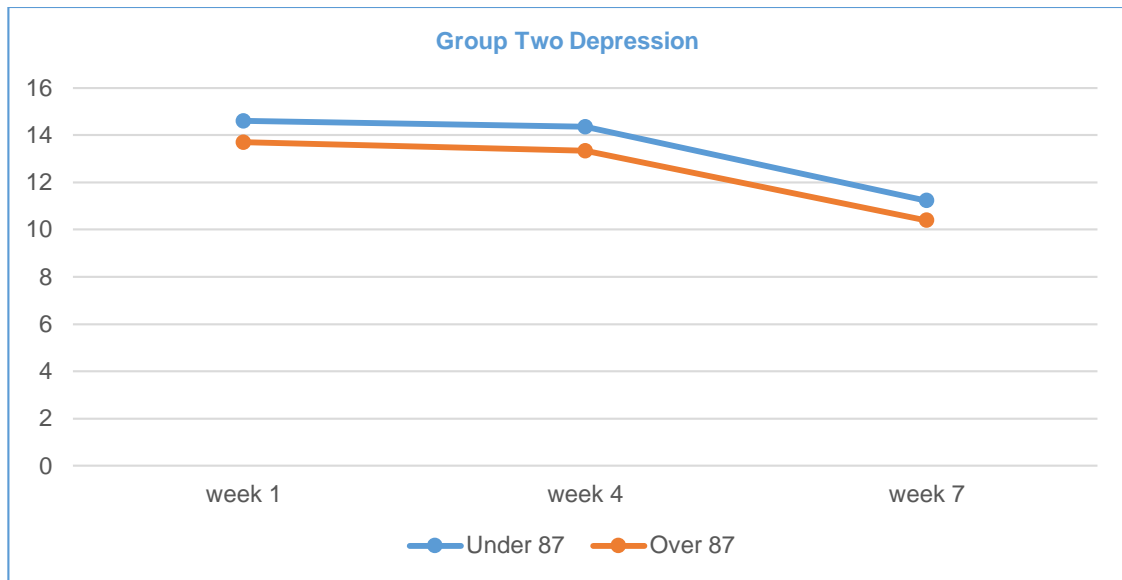


FIGURE 5:27 OVER AND UNDER 87S DEPRESSION SCORES, GROUP TWO

In summary, there were no significant differences between age groups in the effectiveness of the intervention on depression and anxiety; the findings were similar for all ages. However, as a result of the music intervention, there was a statistically significant decrease in the perception of pain in those over 87 but not in those under 87.

5.1.7.3 Sight loss

A further factor known to cause high levels of anxiety in older age is sight loss (de Beurs et al. 2000). Eight participants were either totally blind or suffered such severe sight loss that they were unable to read.

A Mann-Whitney Test was carried out to compare differences in the baseline scores of anxiety between those with severe sight loss and the remaining participants. There was a statistically significant difference with those with sight loss experiencing greater levels of anxiety than those without: ($U = 172$, $Z = 2.129$, $P = 0.033$). These differences continued throughout the period of research and reached significance in weeks 1, 2 and 6, and close to significance in week 7.

Mean rank levels and Mann-Whitney results are shown in Table 5.8 below.

Anxiety	Week 1	Week 2	Week 6
With sight loss	74.43	78.64	58.42
With sight loss	U = 172, Z = 2.129, P = 0.033	U = 86.5, Z = 3.147, P = 0.002	U = 102.5, Z = 2.137, P = 0.033
Without sight loss	49.81	44.99	37.92

TABLE 5:8 COMPARISON OF ANXIETY LEVELS: THOSE WITH AND WITHOUT SIGHT LOSS

There were no significant differences in baseline levels of pain or depression between those with sight loss and those without.

5.1.7.4 Hearing loss

Hearing loss is also associated with an increased risk of experiencing anxiety in old age (de Beurs et al. 2000). Although one of the requirements of participating in the intervention was sufficiently good hearing, in nine participants the severity of their hearing loss was not sufficiently appreciated until after the start of the data collection.

A Mann-Whitney test to explore differences in baseline levels of anxiety levels showed that participants with severe hearing loss experienced greater levels of anxiety, as shown in Table 5.9 below, but that these were not statistically significant. These differences did not persist throughout the research period.

	Anxiety
With hearing loss	60.89
Without hearing loss	50.59

TABLE 5:9 COMPARISON OF ANXIETY LEVELS: THOSE WITH AND WITHOUT HEARING LOSS

There were no significant differences in baseline levels of pain or depression between those with hearing loss and those without.

5.1.7.5 Marital status

A Mann-Whitney test was carried out to explore differences in baseline levels of pain, depression and anxiety amongst those of different marital status. The majority of the sample was widowed ($N = 78$); the remainder was married ($N = 4$), single ($N = 25$) or divorced ($N = 6$). These were re-coded into the two categories of widowed and non-widowed. No differences were found in baseline assessments of pain, depression, anxiety or self-rated health.

5.1.7.6 Education

No differences were found between in the baseline assessments of pain, depression, anxiety and self-rated health of those who left school at 16, at 18 or went on to higher education.

5.1.7.7 Children

The majority of the sample had children ($N = 75$). No differences were found in the baseline assessments of pain, depression, anxiety or self-rated health of those who did and those who did not have children.

5.1.7.8 Length of stay

The different lengths of stay were re-coded into those who had been in the care home for under and over two years. Not all respondents were able to provide the information. Out of a total of 92 responses, 49, with a mean age of 85, had been in a care home for less than two years; 43, with a mean age of 87 had been in a care home for more than two years.

A Mann-Whitney test showed that there were no differences in baseline assessments of pain and depression between these groups. However, there was a significant difference in anxiety levels: those who had been in a care home for less than two years had significantly higher levels of anxiety than those who had lived there for over two years: ($U = 732.5$, $Z = 2.097$, $P = 0.036$). These differences persisted throughout the research period.

5.1.7.9 Music benefit

Participants were asked whether they expected that listening to music regularly would be of benefit to them. 48 (42%) responded that music would be of benefit; 64 (56%) did not know and one responded that it would not.

A Mann-Whitney test was carried out to explore any difference between the first two of these groups on anxiety levels. There was a statistically significant difference in baseline total anxiety scores. Those who thought that music would benefit them had significantly less anxiety than those who did not know if there would be a benefit: ($U = 933$, $Z = 2.361$, $P = 0.018$)

Differences for pain and total depression scores were also lower for those who thought that music would benefit them, but these results did not reach statistical significance.

Kruskal-Wallis tests were carried out to explore differences between the total anxiety scores in each week of the total music intervention period for these two groups. Those who expected music to be

of benefit had lower levels of anxiety each week. These differences reached significance in each week except for week two.

Week 1 ($\chi^2 = 5.573$, $df = 1$, $P = 0.018$)

Week 3 ($\chi^2 = 8.014$, $df = 1$, $P = 0.005$)

Week 4 ($\chi^2 = 7.922$, $df = 1$, $P = 0.005$)

Week 5 ($\chi^2 = 16.161$, $df = 2$, $P = 0.000$)

Week 6 ($\chi^2 = 6.759$, $df = 1$, $P = 0.009$)

Week 7 ($\chi^2 = 8.413$, $df = 1$, $P = 0.004$)

Wilcoxon tests were conducted to evaluate the impact of the music intervention on total anxiety levels in both groups. Statistically significant reductions in anxiety levels between pre and post-test scores were found for both groups during Intervention One in Group One (experimental), but these decreases were not significant for the two groups in Group Two (control).

During Intervention Two, there were statistically significant decreases between pre and post-test total anxiety levels in the 'don't know' category for both Groups One and Two. There were non-significant findings in pre and post-test scores for both Groups One and Two in those who expected the intervention to be of benefit to them, although results approached statistical significance in the experimental group. The results from these Wilcoxon tests are shown in Table 5.10 below.

	Of Benefit	Don't know if of benefit
Group 1 (experimental) Intervention One	Z = 3.697, N-Ties = 24, P = 0.000	Z = 2.704, N-Ties = 18, P = 0.007
Group 2 (control) Intervention One	Z = .476, N-Ties = 14, P = 0.634	Z = .667, N-Ties = 22, P = 0.505
Group 1 (control) Intervention Two	Z = 1.335, N-Ties = 18, P = 0.182	Z = 2.160, N-Ties = 17, P = 0.031.
Group 2 (experimental) Intervention Two	Z = 1.860, N-Ties = 13, P = 0.063	Z = 3.335, N-Ties = 19, P = 0.001

TABLE 5:10 PRE- AND POST-TEST ANXIETY SCORES OF THOSE WHO DID, AND THOSE WHO DID NOT ANTICIPATE A BENEFIT FROM THE MUSIC INTERVENTION: WILCOXON TEST RESULTS

These findings show that the music intervention was effective in reducing anxiety both for those who believed that the intervention would be of benefit to them and those that did not. There was a greater benefit found for those who did not expect to benefit in Intervention Two.

Kruskal-Wallis tests were carried out to explore differences between the two groups in total depression scores for each week of the overall music intervention period. Those who expected music to be of benefit showed lower levels of depression in each week except for week three, although these differences only reached statistical significance in week five: ($\chi^2 = 6.695$, $df = 2$, $P = 0.035$)

Wilcoxon tests were conducted to evaluate the impact of the music intervention on total depression levels in both categories. Statistically significant reductions in depression levels were found for

those who thought that music would benefit them during Intervention One, in Group One (experimental). Findings were non-significant for those who did not know and for both categories in Group Two (control).

During Intervention Two, there were statistically significant findings for both categories in Group Two (experimental). During the same period, findings were non-significant for Group One (control). The results are shown in Table 5.11 below.

	Of Benefit	Don't know if of benefit
Group 1 (experimental) Intervention One	$Z = 3.452$, $N\text{-Ties} = 22$, $P = 0.001$	$Z = 1.115$, $N\text{-Ties} = 15$, $P = 0.265$.
Group 2 (control) Intervention One	$Z = .363$, $N\text{-Ties} = 11$, $P = 0.717$	$Z = .109$, $N\text{-Ties} = 18$, $P = 0.913$
Group 1 (control) Intervention Two	$Z = 1.146$, $N\text{-Ties} = 15$, $P = 0.252$	$Z = .714$, $N\text{-Ties} = 11$, $P = 0.475$
Group 2 (experimental) Intervention Two	$Z = 2.878$, $N\text{-Ties} = 12$, $P = 0.004$	$Z = 2.692$, $N\text{-Ties} = 20$, $P = 0.007$

TABLE 5:11 PRE- AND POST-TEST DEPRESSION SCORES OF THOSE WHO DID AND THOSE WHO DID NOT ANTICIPATE A BENEFIT FROM THE MUSIC INTERVENTION: WILCOXON TEST RESULTS

These findings show that those in Group One who expected music to benefit them had a significant reduction in depression levels, whilst those who were unsure did not. Findings for those in Group Two showed significant improvements in depression levels in both categories.

Mann-Whitney tests were carried out to explore differences in pain scores for each week of the total music intervention period: there were no differences between the two participant groups.

Wilcoxon tests were conducted to evaluate the impact of the music intervention on pain levels in both participant groups. During Intervention One, those in Group One (experimental) who expected music to be of benefit showed a statistically significant decrease in pain levels: ($Z = 2.522$, $N\text{-Ties} = 16$, $P = .012$). For those that did not know, there was a non-significant reduction in pain levels: ($Z = 1.752$, $N\text{-Ties} = 9$, $P = 0.08$). There were no other statistically significant findings.

The results for pain and depression levels showed similarities; in both cases, there were differences found in Group One between the two different participant groups. Those with an expectation of benefit experienced a greater reduction in both pain and depression. However, this was not the case for those in Group Two.

5.1.7.10 The importance of music

Participants were asked how important music was to them. Possible answers were coded on a four-point Likert scale ('very important', 'important', 'quite important', 'not important'). A Kruskal-Wallis test found no significant differences in baseline assessments for pain, depression and anxiety between those who rated music as having differing levels of importance to them.

Wilcoxon tests were conducted to evaluate the impact of the music intervention on each dependent variable for any variation in effect between those who considered music to be very important ($N = 41$), important ($N = 28$), quite important ($N = 34$) and not important ($N = 9$).

Intervention One

Those in Group One, who said that music was very important to them, showed a statistically significant decrease in pain as measured by VDS and IPT, and in anxiety but not in depression.

VDS: ($Z = 2.251$, $N\text{-Ties} = 14$, $P = 0.024$)

IPT: ($Z = 2.051$, $N\text{-Ties} = 13$, $P = 0.040$)

Anxiety: ($Z = 2.692$, $N\text{-Ties} = 15$, $P = 0.007$)

Those in Group One who said that music was important to them showed a statistically significant response in pain as measured by the VDS and in anxiety, but not in depression.

VDS: ($Z = 2.157$, $N\text{-Ties} = 8$, $P = 0.031$)

Anxiety: ($Z = 2.100$, $N\text{-Ties} = 10$, $P = 0.036$)

Those in Group One who said that music was quite important to them showed a statistically significant response in measures of anxiety and depression but not in those of pain.

Anxiety: ($Z = 3.186$, $N\text{-Ties} = 13$, $P = 0.001$)

Depression: ($Z = 2.632$, $N\text{-Ties} = 12$, $P = 0.008$)

Those in Group One, who said that music was not important to them showed no statistically significant decreases.

Intervention Two

Those in Group Two who said that music was very important to them showed a statistically significant decrease in pain as measured by the VDS, and in anxiety and depression.

VDS: ($Z = 2.032$, $N\text{-Ties} = 11$, $P = 0.042$)

Anxiety: ($Z = 2.269$, $N\text{-Ties} = 14$, $P = 0.023$)

Depression: ($Z = 2.526$, $N\text{-Ties} = 11$, $P = 0.012$)

Those in Group Two who said that music was important to them showed a statistically significant decrease in depression only.

Depression: ($Z = 2.539$, $N\text{-Ties} = 8$, $P = 0.011$)

Those in Group Two who said that music was quite important to them showed a statistically significant decrease in anxiety only.

Anxiety: ($Z = 2.527$, $N\text{-Ties} = 8$, $P = 0.012$)

Those in Group Two who said that music was not important to them, showed no statistically significant decreases in any of the three dependent variables.

Instances of significant improvements in pain, anxiety or depression were more frequent in those who considered music to be very important to them than the other categories. There were no significant improvements for those who did not consider music to be important. However, the numbers in this category were very small. For those who rated music as important, there was only one instance of significant pain improvement; for those who rated music as quite important, there were no significant improvements for pain. These findings indicate that those who considered music to be very important benefited more from the music intervention than those who did not.

5.1.7.11 Music genre

Of the different music genres, 46.9% and 33.6% chose classical music and light classical music respectively. Those who chose other genres were in single figure numbers. Categories were re-coded into two groups: classical ($N = 91$) and non-classical ($N = 22$). A Mann-Whitney test showed that there were no significant differences between the baseline pain, depression and anxiety levels of those chose classical and those who chose non-classical music.

Wilcoxon tests were used to investigate the impact of the music intervention. There were statistically significant improvements in anxiety and depression for those exposed to both classical and non-classical music in Group One and Group Two during both music intervention periods:

Findings for non-classical music:

Anxiety in Group One: ($Z = 2.755$, $N\text{-Ties} = 15$, $P = 0.006$)

Anxiety in Group Two: ($Z = 2.226$, $N\text{-Ties} = 15$, $P = 0.026$)

Depression in Group One: ($Z = 2.248$, $N\text{-Ties} = 18$, $P = 0.025$)

Depression in Group Two: ($Z = 2.641$, $N\text{-Ties} = 16$, $P = 0.008$)

Findings for classical music:

Anxiety in Group One: ($Z = 3.729$, $N\text{-Ties} = 21$, $P = 0.000$)

Anxiety in Group Two: ($Z = 2.922$, $N\text{-Ties} = 20$, $P = 0.003$)

Depression in Group One: ($Z = 2.737$, $N\text{-Ties} = 17$, $P = 0.006$)

Depression in Group Two: ($Z = 2.861$, $N\text{-Ties} = 16$, $P = 0.004$)

For those who chose classical music, there was a statistically significant decrease in pain levels in Group One in Intervention One: ($Z = 2.335$, $N\text{-Ties} = 20$, $P = 0.020$). For those in Group Two there was a non-significant decrease.

For those who chose non-classical music, there were no significant reductions in pain for either group in either period.

These findings indicate that those who chose classical music received slightly more benefit from the intervention in that the significance levels were greater for both anxiety and depression, and there was also a significant decrease on the perception of pain.

5.1.7.12 Frequency of listening to music

Participants responded to a question regarding the amount of time that they spent listening to music each week. Possible answers, together with the numbers and percentages of those in each category were: occasionally ($N = 71$, 63%), most days ($N = 16$, 14%), every day ($N = 26$, 23%).

A Kruskal-Wallis test was carried out to identify any significant baseline differences in pain, anxiety and depression between these three groups. This showed that those who listened to music only occasionally had significantly more total anxiety scores than those who listened everyday: ($\chi^2 = 10.383$, $df = 2$, $P = 0.006$). Depression levels were also higher in those who listened occasionally but this difference did not reach significance: ($\chi^2 = 3.583$, $df = 2$, $P = 0.167$). Pain levels and subjective health scores, on the other hand, were higher in those who listened frequently.

Wilcoxon tests were used to analyse the impact of the intervention on the three different listening level groups.

For those who listened frequently, there were statistically significant decreases in anxiety and depression levels for both Groups One and Two during both intervention periods:

Anxiety in Group One: ($Z = 3.520$, $N\text{-Ties} = 24$, $P = 0.000$)

Anxiety in Group Two: ($Z = 3.825$, $N\text{-Ties} = 20$, $P = 0.000$)

Depression in Group One: ($Z = 2.774$, $N\text{-Ties} = 23$, $P = 0.006$)

Depression in Group Two: ($Z = 3.312$, $N\text{-Ties} = 20$, $P = 0.001$)

There were significant decreases in pain levels in Group One but not in Group Two:

VDS, Group One: ($Z = 1.974$, $N\text{-Ties} = 11$, $P = 0.048$)

IPT, Group One: ($Z = 2.097$, $N\text{-Ties} = 11$, $P = 0.036$)

For those who listened most days, there was only one statistically significant finding. This was a decrease in depression levels in Group Two (experimental) during Intervention Two: ($Z = 2.124$, $N\text{-Ties} = 7$, $P = 0.034$). The interventions had no significant impact on pain or anxiety levels in either Group One or Two.

For those who listened occasionally, there was a significant reduction in anxiety and depression for those in Group One (experimental):

Anxiety in Group One: ($Z = 2.536$, $N\text{-Ties} = 8$, $P = 0.011$)

Depression in Group One: ($Z = 2.012$, $N\text{-Ties} = 6$, $P = 0.044$)

There was no significant impact on pain levels in either Group One or Two.

It was also found that there was a statistical difference between those who listened to music frequently and the levels of importance that they attached to it. Those who considered music as very important listened more frequently:

($\chi^2 = 17.185$, $df = 2$, $P = 0.000$)

These findings indicate that there was a greater difference in effect on those who listened to music frequently but that there were also some positive outcomes for participants in the other two groups.

5.1.7.13 Music preference

The procedure for establishing music preference was through the use of a simple but detailed questionnaire. Some participants were able to provide a full picture of their past experience of music and their likes and dislikes, whilst others could give a less complete picture. In order to evaluate any differences in the effect of this factor on the dependent variables, participants were divided into two categories: those who were clear in their choices ($N = 38$) and those who were not ($N = 75$). This was inevitably an arbitrary decision in some cases.

Mann-Whitney tests established that there were no significant baseline differences between these two groups in levels of pain, anxiety or depression.

At the end of Interventions One and Two, there were significant differences between the two groups in pain levels in certain weeks of the intervention, as follows:

VDS week 4: ($U = 201$, $Z = 2.14$, $P = 0.032$)

IPT week 4: ($U = 201$, $Z = 1.978$, $P = 0.048$)

VDS week 7: ($U = 107.5$, $Z = 2.373$, $P = 0.018$)

IPT week 7: ($U = 92.5$, $Z = 92.5$, $Z = 2.666$, $P = 0.008$)

Wilcoxon tests were used to evaluate any differences of effect as a result of the clarity of their choices.

Intervention One

For those who were clear in their preferences, there were statistically significant improvements in pain as assessed by both measures, in anxiety and in depression in Group One:

Pain VDS: ($Z = 2.994$, $N\text{-Ties} = 11$, $P = 0.003$)

Pain IPT: ($Z = 2.239$, $N\text{-Ties} = 11$, $P = 0.025$)

Anxiety: ($Z = 2.979$, $N\text{-Ties} = 20$, $P = 0.003$)

Depression: ($Z = 2.272$, $N\text{-Ties} = 18$, $P = 0.023$)

Pain scores continued to decrease after the intervention was concluded. Findings for the overall score were: ($Z = 2.388$, $N\text{-Ties} = 7$, $P = 0.017$)

During the control period, there were no significant changes.

For those who were not clear in their preferences, there were statistically significant improvements in anxiety and depression, but not in pain in Group One:

Anxiety: ($Z = 3.268$, $N\text{-Ties} = 22$, $P = 0.001$)

Depression: ($Z = 2.659$, $N\text{-Ties} = 20$, $P = 0.008$)

Intervention Two

During this second research period, there were fewer significant differences. For those who were clear in their preferences, there was a significant improvement in levels of depression:

Depression: ($Z = 2.388$, $N\text{-Ties} = 7$, $P = 0.017$)

For those who were unclear in their preferences, there were significant improvements in both anxiety and depression levels:

Anxiety: ($Z = 3.307$, $N\text{-Ties} = 22$, $P = 0.001$)

Depression: ($Z = 3.148$, $N\text{-Ties} = 25$, $P = 0.002$)

These findings suggest that there were some improvements in benefits to those who were able to be clearer in their choices, particularly in the area of pain. The continued decrease in pain for Group One after the music intervention ended suggests that the music had some residual effect in this group.

5.1.7.14 Summary of the additional analyses

The variables included in this analysis were: gender, age, marital status, education, children, length of stay in the care home, sight loss, hearing loss, importance of music, music genre, frequency of listening to music and optimism about music's potential effect. Some were more relevant to the research findings than others. Those that showed no effect on the assessments of any of the three dependent variables were marital status, level of education, hearing loss, or whether participants had children. Others had a significant effect on baseline anxiety levels, but not those of pain or depression. These were sight loss, the length of stay in the care home, age (being under 87), being female, listening only occasionally to music and not knowing if it would benefit them. There were also other sub-groups that benefited more from the intervention than others. These related to age (being over 87), having clear preferences, considering music to be very important, and listening frequently.

5.1.8 Care staff questionnaire

Further data was provided by the questionnaires completed by the care staff in the homes at the beginning of the study (Appendix E). Staff in six of the nine homes completed the forms, which consisted of five questions regarding the participants' general health, mood, experience of pain, depression and anxiety. Answers were given in the form of a four-point Likert scale.

This data was requested for two reasons. Firstly it was hoped that the comparison of the observed report and the self-report would provide some indication as to the reliability or otherwise of the self-report responses. Secondly, as has been discussed in the literature review, the incidence of pain, depression and anxiety is often under-estimated by health professionals. The results of the questionnaire would give some indication as to whether this was the case.

The total number of participants assessed in this way was 64, ie. 57% of the sample: 42 females and 22 males. Statistical comparisons are made with the same participants' own assessments in the next section.

5.1.8.1 Pain

There were small differences in the assessment of those with 'no pain'. There were differences in opinion as to whether the pain was mild or moderate; carers were more likely to assess the pain as being 'mild', participants more likely to assess it as 'moderate'. Their assessments of 'severe' pain were very similar. Overall, carers gave a slightly lower of assessment of pain levels: this was reflected in the mean scores: 2.03 (carers); 2.11 (participants). The relative scores in each category are shown in Table 5.12 below.

	Carers' assessments		Participants' assessments	
	Frequency	Percentage	Frequency	Percentage
No pain	18	28.1	21	32.8
Mild pain	29	45.3	18	28.1
Moderate pain	14	21.9	22	34.4
Severe pain	3	4.7	3	4.7

TABLE 5:12. COMPARISON OF PAIN ASSESSMENTS: CARE STAFF AND PARTICIPANTS

5.1.8.2 Anxiety

Here, there were greater differences between the scores. Carers under-estimated anxiety when compared with the participants themselves in the 'none' and 'mild' categories. They over-estimated those in the 'moderate' category. Mean scores showed that carers generally assessed anxiety as being lower than the self-report of the participants: 1.86 (carers) compared to 1.97 (participants). These are shown in Table 5.13 below.

	Carer's assessments		Participants' assessments	
	Frequency	Percentage	Frequency	Percentage
No anxiety	25	39.1	15	23.4
Mild anxiety	25	39.1	39	60.9
Moderate anxiety	12	18.8	7	10.9
Severe anxiety	2	3.1	3	4.7

TABLE 5:13 COMPARISON OF ANXIETY ASSESSMENTS: CARE STAFF AND PARTICIPANTS

5.1.8.3 Depression

Here, there were only very small differences between the assessments of the two groups. This was shown by the mean scores: 1.65 (carers) compared to 1.63 (participants). These are shown in Table 5.14 below.

	Care staff assessments		Participants' assessments	
	Frequency	Percentage	Frequency	Percentage
No depression	31	49.4	29	45.3
Mild depression	23	35.9	27	42.2
Moderate depression	7	10.9	6	9.4
Severe depression	1	1.6	-	-

TABLE 5:14 COMPARISON OF DEPRESSION ASSESSMENTS: CARE STAFF AND PARTICIPANTS

Differences in assessment between the care homes in these assessments were also investigated. It was found that the assessment of care staff varied in its closeness to the data provided by the participants. Strong positive correlations between the two assessments were found for all three dependent variables in only one care home. These were investigated by using Spearman correlation coefficients. In this particular home, there was a strong positive correlation between the carers' and participants' assessments of pain: ($r = 0.600$, $N = 16$, $P = 0.014$); of anxiety: ($r = 0.601$, $N = 16$, $P = 0.014$); and of depression: ($r = 0.503$, $N = 16$, $P = 0.047$). There were correlations found for anxiety and depression in other homes, but this was the only correlation found for the assessment of pain from amongst the six homes which provided data. This suggests that the assessments of pain were less reliable than those of anxiety and depression.

5.1.8.4 Gender

There were some significant differences between male and female scores in the assessment of mood, general health and pain as rated by care staff. Mann-Whitney tests were carried out to evaluate these differences.

There was a statistically significant difference in participants' ratings of their general health with males rating themselves significantly lower than did females: ($U = 302$, $Z = 2.478$, $P = 0.013$). The same trend was shown in the assessments by care staff but this did not reach statistical significance.

There was a statistically significant gender difference in carers' ratings of general mood. Females were rated as having significantly lower rating of mood than males: ($U = 312.5$, $Z = 2.438$, $P = 0.015$). This was reflected in participants' scoring, but the latter did not reach significance.

There was a statistically significant difference in levels of pain. Males were reported as having significantly greater pain levels: ($U = 317.5$, $Z = 2.184$, $P = 0.029$). Again, this was reflected in participants' own scoring but the latter did not reach statistical significance. When mean rankings for the total sample were compared (using the participants' self-report scores), these findings were replicated, although they did not reach significance:

($U = 1059$, $Z = 1.422$, $P = 1.55$)

There were no significant differences between males and females in depression scores, either as rated by care staff or by participants. However, there were differences of report between participants and care staff in the assessment of anxiety. Care staff rated males as having slightly lower levels of anxiety whilst participants' assessments showed significant differences.

Although there were variations between the carers' assessment and that of the participants themselves, these were small which suggests that the overall scoring method of self-report was reliable.

5.2 Summary of the results

In answer to the research question 'What impact does regular listening to preferred music have on levels of chronic pain, depression and anxiety in older people in long-term care?' the analysis of the quantitative data demonstrates that the music intervention led to a statistically significant decrease in levels of pain, depression and anxiety. Those with pain levels between mild and moderate received the greatest overall benefit from the music intervention.

In answer to the research question, 'To what extent do the positive effects of music continue after the period of the music intervention?' the analysis showed that although scores on measures of pain, depression and anxiety did increase when the music-listening period was over, this occurred slowly and gradually, thus suggesting some residual effect of the music.

Although there were minor differences of assessment between the self-report assessments of the participants and the objective evaluation of the care staff, these did not reach statistical significance. It was concluded that the lack of significant differences between the two assessments indicated that the use of self-report for the assessment of pain, depression and anxiety was sufficiently reliable.

There were a number of additional findings. For example, there were of a number of variables that gave rise to higher levels of anxiety. These included being female, suffering from severe sight loss, being a recent entrant to care home, not listening frequently to music and having a low expectation of music's benefit. As for findings relating to pain, there was greater relief of pain found in those over the age of 87 as compared with those under 87. This was also the case for those able to

provide clear details of their music preferences. There were no additional findings of a significant nature relating to depression.

Chapter Six presents the analysis and findings of the qualitative analysis. Chapter Seven then discusses the findings of both quantitative and qualitative analyses.

6 Chapter Six

6.1 Study two: a qualitative study, analysis and results

6.2 Introduction

The assessment of pain, depression and anxiety by means of individual interviews, rather than through written questionnaires, provided the opportunity to collect qualitative data. Findings from the quantitative data demonstrated positive findings about the therapeutic benefits of music on pain, depression and anxiety. However questions remained that could not be answered through statistical analysis alone. Using both qualitative and quantitative methodologies together gave an opportunity to come to a greater understanding of the participants and a more holistic view of the effects of music.

As discussed in Chapter Four, semi-structured interviews were chosen as the preferred method of enquiry. Each participant was asked the same questions, whether relating to demographic details, musical background and preference or the three dependent variables of pain, depression and anxiety. However, the format of the interview also allowed for follow-up discussions and for more expansive answers if there were particular areas of interest that interviewees wanted to discuss (Bryman, 2008). Areas of discussion often related to past or present situations and provided some insight into the participants' experience of old age, care home life and their ability and enthusiasm to engage with music.

In addition, an exploration of the characteristics of those individual participants who benefited the most from the music intervention, in comparison with those who did not, provided information as to the most likely beneficiaries of future music interventions and of the different factors that contributed to their effect.

6.3 Method

The selection of questions for the weekly interviews has been discussed in detail in Chapters Four and Five. Their primary purpose was the assessment of pain, depression and anxiety levels for the subsequent quantitative analysis. The additional commentaries on participants' lives provided the data used for the qualitative analysis.

All but a few of the interviews were conducted in the participants' own rooms. It was hoped that their own familiar environment allowed them to feel at ease and also afforded them the necessary privacy for providing as much information as they chose. Interviews were conducted in as relaxed and informal manner as possible. As well as agreeing to the recording of the interviews in the participant consent form, participants were asked each week for their continued agreement. There were no instances of refusal. Recordings were made with a mobile phone and subsequently downloaded and stored on my password-protected computer. Notes were also taken.

Each interview was initiated by some informal, introductory questions. An initial 'How are you?' or 'How has your week been?' made participants feel at ease, gave them an opportunity to talk about themselves, the previous week's events and their general mood and wellbeing. During the assessment of pain, depression and anxiety, there were opportunities for participants to talk, for example, about the causes of their irritation or nervousness; of their attitudes to, and coping mechanisms for pain; of their feelings relating to their contentment or satisfaction with life. The majority of the participants enjoyed the opportunity to talk. They had the ear of an interested outsider who treated all the information as confidential; there was no need to filter comments about their situation in order to avoid causing concern to their family. Interviews varied in length between 15 minutes and an hour, a reflection of the differing levels of engagement and response; some delighted in the opportunity to talk whilst others were more reticent.

6.4 Analysis

Although the analysis of the quantitative data found statistically significant results for the reduction of pain, depression and anxiety, it was clear during the data collection process that there were a variety of responses to the music intervention; some benefited more than others and there were those who did not appear to benefit at all. The purpose of the qualitative analysis therefore, was to explore some of the reasons for the variability in these responses and to determine whether it might be possible to identify those most likely to benefit from a music programme. This involved an examination of the experience of old age as lived in a care home, an exploration of how the limitations of old age impacted the procedure of the intervention, of additional effects gained from the music and of some of the reasons for the differences in response.

During the 14-month period of data collection, it became apparent that many of the participants' attitudes, experiences of care home life and old age were similar; several themes relating both to their everyday lives as well as to the music intervention began to emerge. Following the completion of the data collection, an analysis of the qualitative data was carried out. This was achieved through a careful reading of notes made during each interview, and of diary entries made at the end of each day's data collection. These included observations of their mood, behaviour and attitude to life as well as their responses to the music intervention. Recordings of the interviews were then listened to and further notes taken. Given the quantity of recorded material available for analysis, full transcriptions were not made. In some cases, the vocal quality was poor; this was generally due to particular health conditions affecting the voice, such as Parkinson's disease and strokes; twelve participants fell in to this category. There were also some individual cases of recording failure due to researcher error; this applied to seven individual interviews. As far as was possible, all the participants' data were included in the analysis. Appendix F shows an example of the method used.

Through this familiarisation with the data, a number of themes were identified that related to the stated purpose of the analysis. Despite the differences in personality, socio-economic background,

health and environment there was a striking similarity in many of the views and feelings expressed. These were organised under simple headings: attitudes to ageing, to care home life, to others and to music. Data relevant to each were then collated in order for comparisons to be made and for the identification of common and recurring themes.

6.5 Results

The identified themes fell into two primary categories; the experience of old age in a care home (thus encompassing attitudes to ageing and to others) and the impact of the music intervention within that environment. The former category was largely characterised by the over-arching theme of 'loss'. This was identified in the literature review as one of the hallmarks of old age (p.18). Relevant to this sample were the personal losses of autonomy, physical and cognitive function, social contact and confidence. In relation to others, there was the social comparison (the comparative effects of function) that often afforded them some sense of advantage as well as external influences such as the effects of the weather. These themes were explored in order to determine what impact they had on the procedure of the music intervention and its resulting effect. This is an important area to investigate as it can help to inform the methodology of future research.

The impact of the music intervention was expressed, for the most part, in terms of its effect on mood and in its ability to bring about physiological responses.

The two categories and the themes within each are tabulated in Figure 6.1 below.

THE EXPERIENCE OF OLD AGE AS LIVED IN A CARE	THE IMPACT OF THE MUSIC INTERVENTION
Loss of autonomy	Mood regulation
Loss of memory	Physiological responses
Loss of functional health	
Loss of social contact	
Loss of confidence	
Boredom	
Social comparison	
The experience of pain	
The effect of weather	
Opportunities for music listening.	

TABLE 6:1 THE THEMES THAT EMERGED FROM THE ANALYSIS OF THE QUALITATIVE DATA.

6.5.1 The experience of old age as lived in a care home

6.5.1.1 Loss of autonomy

This was the most dominant theme and was experienced by all the participants. As noted in the literature review in Chapter Two, Western society rates individual autonomy and independence highly. Any threat to it, such as through a reduced ability to carry out activities of daily living, intensifies feelings of loss (Lloyd et al., 2014; Ferrell, 1991).

The British government's community care policy is to enable individuals to stay in their own homes whenever possible, but at some stage the level of care needed may become such that the individual has to move to a care home. Although a necessary provision, there are few in such a situation who do not mourn the loss of their own home. For many, this encompasses the loss of an environment that they have carefully chosen, one full of memories of happier times. This move to an institution was fundamental to the participants' feelings that they had lost control over their lives. Of the 40 or so comments made about the necessity of being in a home, there were only four participants who made positive statements about their situation. One participant who had been in the home only a few weeks expressed the extent of the challenge. For her it topped any former demanding situations of her life: 'moving to a care home is the biggest thing I've done in my life, far bigger than all of my travelling ...'

The loss of power to choose the way that they lived was, for many, devastating. It was often the small choices of everyday life that were a constant reminder to them of their dependency: what they ate, when they ate it, who they sat next to, when they got up or went to bed, when they had a bath or shower and in some cases, what they wore. In many instances, even their freedom to go outside had been taken away. They were powerless over so many aspects of their lives that most people do not have to question. All of them would echo these words, 'We wouldn't be here if we didn't have to be.'

The need for help was resisted. One lady said, 'It's very important that I do things myself. I could not bear to have someone having to help me.' Of course, by coming into a care home she had already accepted that some help was necessary, but she clung on to such ability as she had to look after herself. There was particular resentment expressed when help in getting dressed was required. As one participant stated, 'I don't want anyone to get me dressed ... if that happens I want to die.' Another expressed it rather more mildly, 'Having people help me dress isn't enjoyable.' It was not just the physical help to get dressed that was resented. In some cases participants were not able to judge when their clothes needed laundering and in such situations care staff would choose the clothes that the participant wore each day. One participant found it very upsetting when she had to attend Mass in what she felt were unsuitable clothes for the occasion. Another did not like the clothes chosen for her for the Christmas party and said, 'I'm not dressed elegantly for the party'. Having to rely on someone, often from another cultural background, and certainly from a different generation, to make such personal decisions was mortifying. Another participant complained bitterly that the care staff constantly put shawls around her. Unlike many people of her age, she had no need of extra warmth and resented the lack of personal knowledge of her preferences.

Another insult to independence was the need for help with walking. Many older people develop problems with their balance and become prone to falling. They then fear it happening again. As one expressed it, 'I'm not used to being like this. I get nervous about falling.' This affected all their efforts to be mobile and was particularly pertinent when visiting the bathroom during the night, often a time of lower mental and physical awareness. As well as the fear of falling, there was the frustration felt by the 'lack of ability to do certain things with my body,' as one participant said. It made him grumpy. He was not alone. Another said, 'I feel useless today.' Another summed up her feelings of frustration, dependence and deterioration with these words: 'I'm an 80-year-old baby. I seem to have gone backwards, I've had three falls.'

Accepting their need of a wheelchair was often devastating. As one said, 'I'm anti-wheelchair.' Another participant refused to use one, but was forced to concede that she needed help when

walking outside her room. She saw this as another sign of the inevitable deterioration of old age. She resolved, 'I've got to make myself walk again.' Moving to a wheelchair was often a defining moment in the process of deterioration. As one of them responded when asked how he was, 'Well, I can't walk, what do you expect?'

The participant who said 'I don't like being helped', spoke for them all. And they probably all identified with the feelings of helplessness expressed by the man who said, 'I want people to do what I say, not what they tell me [sic].'

As well as the indignity of being helped, those not able to be independently mobile had to accept their lack of control over where they were taken and when. Inevitably residents have to wait for help and therefore have little control over when they will arrive somewhere. They can no longer make their own judgements about when they will make their way to a meal, to an activity or to a doctor's appointment. Social contact is curtailed, as they are not able to pay visits as and when they like. As one commented, 'I like to be where I want to be when I want to be there.' There is no longer any control of time, either of being early, on time or late. Instead, 'You ring the bell and wait and wait.'

The knowledge that their need for dependence would continue to deteriorate was intensely upsetting. 'Please God, take me when I can't do anything,' was the cry of a woman who, although declining in her abilities, was relatively active; however, she knew what might lie ahead. She was expressing the fear that many of them felt about their future, 'the fear of uncertainty, of not being sufficiently able'. Another said, 'I'm anxious; I wouldn't like to live to a hundred. Things get worse.' Similarly, another remarked, 'The thing that worries me most is becoming ill. I don't mind dying.' One participant summed her situation up as follows: 'Every day it's as if another slate has slipped off the roof. Every day is a little worse than the day before.' Similarly, another compared himself to a car manufacturer saying that when young he had been a Rolls Royce. He now considered that he was more of a Ford Fiesta.

Others were more frustrated than fearful: 'I lie here and think of all the things I ought to be able to do and can't. Why me? Why did it pick me?' and, 'I never feel calm these days because I can't do the things I want to.' For others, it was an assault on their hopes of contentment: 'The days of being happy as I know it are gone. I am falling apart from the inside seams.'

As well as their difficulties with mobility and the consequent need for an increasing amount of help, many participants found that there were a number of daily features of life in a care home that were a constant reminder to them of the lack of control they had over their lives. One oft-cited example was the loss of control over the food that they ate: the choice, the quality and the timing of its service. In some homes, there were more comments than others, no doubt reflecting differences in the quality of their service.

The majority of comments were simple pleas for greater control. It was often the small things like the tea or coffee that rankled the most. For example, one said, 'I would love to be able to make tea the way I like it.' Although they might accept not making it themselves, that did not make it easy: 'The tea is never as I want it.' It was not just the quality of the food and drink on offer, it was also the inability to have it when it was wanted: 'I'm cross; there was no tea when I asked for it.' If they woke early and wanted a drink, it was not possible; they had to adhere to the timetable of the care home. The momentary wish for, say, a piece of toast, could not be satisfied. They had to leave behind their own personal tastes and habits. They had to accept that they could not 'fry an egg' if they wanted to; they had to accept that supper was served at 5.30.

For others it was more to do with a dislike of the food provided. There was nothing that they could do to change it, so they had to put up with it. As one said, 'I go down and look at the awful menu and have a yoghurt and come back up again.' It is not surprising that the issue of food was an irritant to many participants. The majority were women and had been cooking and providing meals all their lives. They had strong opinions as to how they liked things. The lack of control over simple daily needs acted as a constant reminder of the lack of autonomy that they now possessed. One

participant's words summed it up: 'I wish I was fit enough to live in my old home, with a garden, doing exactly as I like, with the meals I want.'

There were other areas of frustration for the residents. For many there was the sense of confinement and restriction. Bearing in mind the comments made about food, it is unsurprising that many expressed frustration that they could not go shopping to choose and buy their own provisions. For others it was more of a need to escape the confines of the home and to make personal choices. For example, one said, 'I'd love to be able to go out when I feel like it and go shopping.' Another wanted to just have 'a look around'.

Although some had come to terms with the imposed restrictions, for the majority it was an ongoing struggle. There were the simple heartfelt pleas to see life outside the home: 'I would really like to go outside,' 'I'd like to get out, I'm stuck in here,' 'I would dearly like the freedom and strength to get on a bus and go into town.'

Others resented their loss of freedom. Comments made included:

- 'They won't let me go out in the street.'
- 'Confinement is difficult, we are not allowed to go out.'
- 'It's difficult to be incarcerated like this.'
- 'I wish I could get out more. It's that feeling of being trapped.'
- 'I can't complain, but I'm stuck in here all day.'
- 'I would like to go out but I can't.'
- 'We are confined all the time.'

The lack of autonomy over small daily events had a direct effect on their wellbeing. This was expressed in the following ways:

- 'Frustration at not being able to do things takes the edge off contentment.'
- 'I never feel calm these days because I can't do the things that I want to do.'
- 'The lack of ability to change anything can lead to less contentment.'

Clearly, the challenges posed by the decline in function and therefore of autonomy are not easily dealt with. Participants felt that 'you are even less in charge of yourself than you normally are,' and knew that the process of decline would inevitably continue. Their frustration was expressed forcibly:

- 'I know that we all have to adapt to the ageing process but I really resent it.'
- 'Why am I existing? What for?'
- 'Other people have done it [getting old], why can't I?'
- 'I hate getting old.'
- 'I start thinking, what's the use?'
- 'I don't want to go on much longer like this.'
- 'I don't seem to do anything to justify my existence. Why can't I be better? I don't want a future, I want to die.'
- 'In a way, I have no future.'

These are desperate sentiments. The combination of daily affronts to an individual's sense of autonomy and the realisation that there will be no improvement to their condition present a disturbing picture of the quality of life experienced by many in the closing months or years of their lives.

6.5.1.2 Loss of memory

Memory loss was something that was pertinent to almost all of the participants and it became obvious that this was also a cause of considerable distress and a daily reminder of decline. As Craik

(1994) suggests, age-related decline in memory can cause concern to many older people. It has also been proposed that the frequency of memory complaints is correlated with depressive symptoms (Verhaeghen et al. 2000).

There were many degrees of memory loss, ranging from problems with remembering names to complete confusion as to what they were meant to be doing or where they should be going.

Due to the nature of the interviews, there were several occasions when participants were frustrated by lapses in memory. Questions about their preferred music often led to ambivalent answers such as 'I like everything,' 'I like most things,' or, 'Whatever, old timers'. This diverted attention from the fact that they were unable to remember specific details. 'I wish I could remember things properly' was a familiar refrain. On being asked about their feelings during the last few days, some were unable to remember. For example, on being asked whether she had felt low during the previous few days, one participant responded, 'It's hard to remember.' There were also instances of not knowing what they were worried about. For example, one participant admitted, 'I worry about something, but I can't think what it is'.

For the most part, there was distress and sometimes embarrassment at their failing memory: 'Isn't it terrible to get like this?' or 'Sometimes you feel such an idiot really,' or 'I'm ashamed of myself, I can't remember.'

For the majority, it was the difficulty in remembering recent events or names:

'I can remember the date and time I joined the army in the 1940s but I can't tell you what I had for dinner last night.'

But for some it was the reverse; they had difficulty remembering events from the past. For example:

'I was married a long time ago. I can't remember which month it was that my husband died. I can't remember to whom I was married. That's awful, that's really shameful.'

A number spoke of events as having taken place so long ago that they could no longer remember them. In one conversation, the participant said:

'I can't remember if I worked or not. I think I must have done. I can't remember if I played a musical instrument. It's so long ago, I've forgotten.'

For others, it was the difficulty of remembering what they should be doing next. One said,

'My poor old head can't remember what I'm meant to be doing.'

Lapses in memory also caused anxiety as to whether they would be able to remember how to operate the music players. To learn new skills in old age is a challenge. This was noted by Zajicek (2001), who stated: 'Old age is associated with a decline in intellectual skills which affects the absorption of new information.' As one participant, when given instructions on how to work the music player, said, 'My goodness, I hope I can remember.'

These memory concerns affected almost everyone and were often a cause of anxiety: anxiety about their current failure to remember something and anxiety about further cognitive decline. They would all agree with the participant who said, 'If I could only remember.'

6.5.1.3 Loss of function

Besides loss of mobility there are other faculties that diminish in old age. Those observed amongst the participants in this research were the deterioration in sight and energy.

Of more impact to the research was the deterioration of sight that applied to a number of participants. Although only seven participants suffered complete sight loss, a number of others were

affected by partial and deteriorating sight. It had a negative impact on their activities. As one said, 'When you can't see properly, life is so different.' Shopping for clothes or food was near impossible; entertainment was greatly restricted. The loss of the ability to read was particularly devastating. In a world of reduced function, reading was one activity that was a lifeline for many. For some, it had become completely impossible. As one said, 'I love reading, but I can no longer see.' For others, it had become too much of a strain and they had given up. The consequent lack of stimulation from either television, newspapers or books was a heavy loss. There was also the sadness of not being able to enjoy family photos or cherished pictures. They had to adapt to a much reduced world. A participant whose sight was deteriorating admitted, 'If you dwelt on it you would get in a terrible state,' and another in the same situation said, 'You can't expect to be positively happy with loss of sight, taste, smell, bones getting old, there's a lot to put up with.' Their difficulties, of course, extended to their capacity for operating the music players and this added to their awareness of their incapacity.

Loss of energy was also noted as having an adverse effect on mood and optimal function. Whilst there was an acceptance that a decline in energy was inevitable at this time of life, the chronic tiredness experienced by some led to further restrictions on their activity and a lowering of morale. Comments included, 'I'm too tired to do anything,' 'I'm always dead tired,' 'All I want to do is close my eyes,' 'I wish I had a bit more energy,' 'Sometimes I feel really tired and all I want to do is to curl up and go to sleep,' 'It takes me all my energy to get to the loo.' For those who felt this crushing fatigue, life became more constrained; they were less inclined to take part in any activity and less able to enjoy its potential benefits. As one said, 'I get tired and then I get down.'

The simplest of activities, once carried out without thinking, were tiring and became an effort. It could be brushing teeth (one participant described how this took her an hour and five minutes), getting dressed, going to the bathroom, and walking to the dining room. For many, these tasks were all-consuming and sapped any remaining energy for other activities. As Victor et al. (2008) observe, the additional time taken to complete essential tasks leaves less time and energy for more social

activities. One participant endorsed this and commented that it was difficult to fit everything into the day. Another said, 'Age takes a lot out of you.'

6.5.1.4 Loss of social contact

As discussed in Chapter Two, loneliness, for many older people, is common at their stage of life. It is directly related to poor levels of health and wellbeing (Cacioppo et al., 2002; Hawkley and Cacioppo, 2003; Cattani et al., 2005). It might be thought that living in a care home would give sufficient social contact. This was indeed the case for a small number of the participants. They talked about going to the lounge, watching television and seeing other residents. When asked whether she was ever lonely, one laughed and said, 'What? Get lonely in this place?' However, this was not enough for the majority and the reality for them was rather different. Although there were other residents who occupied the same communal spaces, and who, in theory, were able to provide companionship, very few of them were capable of any relevant social interaction. Many were incapacitated. There were few observed instances of meaningful engagement with other residents.

As one participant eloquently expressed it:

I shouldn't [be lonely] as there are plenty of people here. All the people I love most are not here. And quite a lot of people who are here, I'm sorry, but I wouldn't choose as friends. And that brings on loneliness really.

Several talked of the difficulty of living with people with whom they had little in common. One remarked, 'There's no one with whom I share interests.' Another put it more starkly: 'All the people are mad or don't speak.' Many recognised that loneliness was inevitable. One participant admitted, 'Of course you get lonely here. There's no point in saying you don't because you do. That's something you have to live with.' Another agreed: 'I think most people do' [feel lonely]. Not everyone was so honest. Many participants simply admitted to 'a little' loneliness or in several cases

'not at all', despite making other remarks about their feelings of isolation. Loneliness is often regarded as a social failure and therefore hard to admit to. This was reflected in the fact that only 35% of people admitted to it in the first interview. The true proportion would appear to be rather greater than that.

As well as the lack of shared interests and experience, a further cause of loneliness was the difficulty of making new friendships so late in life. It requires an effort that not all were able to make. Situations where there were regular opportunities for conversation were not always found to be agreeable. One participant, who did not suffer fools gladly, admitted that there were many people who irritated her, both other residents and care staff; there was no-one whom she would choose as a friend.

Mealtimes were often described as being frustrating due to the cognitive or physiological disabilities of other residents. One participant said, 'The average mental age here is eight. Only three are compos mentis.' One of those three thought that it was even worse, 'Only two are in their right minds'. She said, 'I feel as though I'm having lunch in a lunatic asylum.' She talked of the difficulty of engaging in a proper conversation or of making friends. In some homes, residents were given particular places to sit in the dining room. This lack of choice sometimes led to resentment, outright dislike or irritation. One participant dreaded mealtimes because she had little in common with her neighbour who constantly complained. Another talked of her irritation each mealtime because she 'couldn't bear Marigold'.

Some could not cope with the revulsion they felt at having to observe others who had difficulties with feeding themselves. As one put it, 'I think it would make me sick to go and eat with the others. However, others chose to go to the dining room in order to combat the loneliness of spending long hours in their rooms.

For those with severe hearing or sight loss, the sense of isolation and loneliness could be more acute. For example, poor sight led to difficulties in using the telephone, thus reducing contact with outside friends and family. Poor hearing reduced the ability to talk to people. As one participant admitted, 'I'm not hearing very well so I don't like conversation.'

The decline in the number of friends that participants had outside of the care home also contributed to feelings of isolation. This was due either to death or friends' inability to visit due to increasing immobility or competence. One participant commented,

I'm losing, almost weekly, all my friends. All these people made up my world. It feels as though bits of my world are breaking off. My world is getting smaller and smaller.

This sadness cannot be allayed by conversation with fellow residents who have no knowledge of the people concerned. For many of them, there was the ongoing sadness and sense of loss after their spouse's death. As one commented, 'I miss my wife. I pray to her and then I am not lonely.'

The residents of one care home were open about the risks of making close friendships. As it catered for a large number of residents, funerals were frequent and, as in all care homes, they were constantly faced with death. This led to a certain restraint: 'We don't mix. If you get too friendly, one might die and what then?' 'You mustn't make too great a friend with anyone. One dies and the other is lost.'

There was another reason for keeping some distance: 'All right here, but you never get close to people. You don't want to discuss private affairs – it gets around everywhere.'

The majority of the residents relied on family visits to allay loneliness. When talking of things that they looked forward to it was generally family visits that they referred to. There were noticeable dips in mood if these visits were interrupted for any reason: 'My daughter is going away on holiday for a month. I know I am going to miss her.'

All the care homes in this study provided a range of activities for residents to join in. Some participants joined in these with enthusiasm and for them there was greater social contact; shared interests facilitated conversation and engagement with their co-residents. There were many, however, who did not. This could be for a variety of reasons: a dislike of the events provided, poor health or because 'I'm not a good mixer,' or 'I'm not a great party type.' One participant, aged 85, talked of his reasons for not joining in; he wanted to preserve his identity and independence. He said,

I'm not old, but it makes me feel old to mix with people of that age, I mean of 90 odd. I don't like joining in. Maybe because I feel that I'm better. If you join a group that are like that, then you become like that in spite of yourself. I don't want to do that. I'd rather be independent and alone. But I'll probably become like that anyway ...

This sense of isolation appeared to be an intractable condition of this sample. Whether because of declining function, dislike of fellow residents or a general disinclination to join in activities, there was a strong likelihood of isolation. Few of them were able to enjoy the benefits of companionship such as 'happiness, strength and contentment' (Bright, 1997); it was a big loss.

6.5.1.5 Loss of confidence

As a result of experiencing the loss of physical and/or mental capability, many participants experienced a loss of confidence in themselves and in their abilities. For some, it was the growing anxiety that they experienced over the minor details of running their lives. For others, it was the inability to carry out simple tasks. Some were conscious of their confusion and inability to plan their days. Their feelings could be summarised by the participant who said, 'Old age is like a second childhood, you can't do things anymore.' Others expressed similar feelings as in 'I don't feel that I am master of anything,' and 'Everything I do, I do in a hopeless way'. This failure to achieve was

hard to accept: 'I don't seem to do anything to justify my existence,' or 'What's the point of being alive when I'm useless?'

There were few occasions when any organisational ability was required by the residents themselves. However when this was necessary, it could cause great anxiety. Even the simple ordering of a taxi could induce considerable apprehension. For example, one participant spent days worrying about what time to book a taxi, what time she would have to get up in order to be ready, what she should wear. This was not uncommon. These apparently minor matters assumed huge importance. For another participant, a minor change of plan made by the care home on his behalf was devastating. He said, 'This has destroyed my happiness.' Making arrangements for entertaining visitors also triggered anxiety. As one expressed it, 'My bent for organising things has gone.' Many of them knew that these were situations that had been more easily dealt with in the past.

The inability to carry out specific tasks was a constant reminder of the decline so common to many; it led to diminishing levels of self-confidence. One participant who had Parkinson's disease and little control over her hands, found every meal a challenge. The simple acts of eating and drinking were hurdles to overcome. She said, 'I will be glad if I can get through the day without accident.' For others, it was writing that they found difficult. Not only was it the decline in manual dexterity. One participant talked of wanting to write a letter, but it was too much for her. She listed the difficulties: finding a pen, finding a card, finding the address, finding a stamp. This was before she had even begun to write. These concerns became very apparent during the weeks leading up to Christmas. Would the Christmas cards get written in time? Many were keenly aware of the decline in their abilities since the previous year. As one expressed it, 'The point is that when you get older, you get worse at everything.'

Several had difficulty in using any form of technology. One participant, when asked if she ever listened to radio stations other than Radio 4, said, 'If I moved it, I'd never be able to get it back.' Another, who was determined to use an iPad, found it impossible to remember instructions from

one moment to the next. Although far more able than many of her co-residents, the sense of frustration was the same. Others with less competence despaired over their inability to operate the music player: 'I can't work it myself. I can't do it; I have no strength at all. I can't even use the telephone, I can't press the buttons.'

Others could operate the music player when given instructions but soon forgot. One participant, confident during the interview, later found herself unable to remember how to control the volume. It was frustrating for them and made them feel stupid. As many of them had had no experience of using music players of any kind, there was some measure of fear experienced by some. As one said, 'I don't like music coming out of little boxes.'

Confusion and cognitive decline was the cause of a decline in confidence in some. In these situations, participants might get anxious about what they were doing or what they should be doing. One questioned, 'Am I going to sleep, wake, what am I going to do?' They might struggle to find their way to the dining room, or back to their own bedroom; they worried about doing or saying the wrong thing or about being in the wrong place or missing something.

These various instances of declining confidence were often the cause of increased levels of anxiety, and reduced general wellbeing. Indeed, this was the case for each of the different areas of loss described here. It affected all the participants in one way or another. Even for the most cognitively and physiologically able, the sense of loss was acute.

The two themes of boredom and deterioration could also be described in terms of loss, and in many cases, the two are linked. Boredom, for many, was due to their changed circumstances and in their declining ability to carry out previously enjoyed activities.

6.5.1.6 Boredom

With less ability and energy to do things for themselves, many of the participants found that time hung heavily. Forty-one per cent admitted to some level of boredom in their first interview and others alluded to it separately. For some, it was difficult to admit to being bored and they regarded it as a failure. It was dismissed by one participant as something that only dull people experienced. Although arguably true for those with energy and opportunity, it was a harsh indictment of those struggling to adjust to a life constrained by poor function and limited contact with life beyond the four walls of the home. They were living in a shrinking world. Comments made included, 'This sort of life is very boring,' 'Of course I am lonely – and bored,' 'There isn't so much that I can do,' 'I'm not used to being bored. It's something that I have never understood, so I find it quite difficult,' 'I can't watch television anymore; sitting here is deadly.' And another said, rather more forcefully, 'I am just bored stiff.'

The restrictions that were imposed on many residents with regard to going outside the care home environment were often resented. This varied widely between the different care homes; some were able to come and go more freely than others. One participant admitted, 'I get bored because I am not free [to go out],' and on another occasion reflected, 'We haven't got a lot of friends to see, shopping to do, homes to look after.' These responsibilities had ceased, and although a relief for many of them, it resulted in few demands being made on their time, which in turn, resulted in considerable boredom. There were a number who complained: 'I don't know what to do with my day.' Although all of the care homes provided a range of activities for their residents, these were inevitably limited in their appeal; not every resident will enjoy the same activities and some remained aloof from them. As one participant commented, 'The social things are not often what I want to do.' Many others expressed similar comments. Some recognised that it was a characteristic of being old. One had realised that 'boredom is part of the problem that you have to go through as you age.'

They responded to boredom in different ways. One participant admitted that she found life so dull that any disturbances to care home life were things to look forward to as they made life a bit more interesting; she was referring to crises of one kind or another, rather than planned events arranged for their entertainment. Others depended on television. As one said, 'There's not much else.' One recent arrival in a care home talked of watching television just to get through the evenings; she said that without it, she would have been ready for bed by seven o'clock. For some, being bored gave them time to brood on their situation and made them depressed. As one of them admitted, 'If I haven't got enough to do I get bored quite easily and then I get depressed.' This relationship between boredom and depression has been observed by Rupp and Vodanovich (1997) and Sommers and Vodanovich (2000) and may have been relevant to a number of the participants.

6.5.1.7 Social comparison

Participants were very aware of each other's state of health and functional ability. Observing others who appeared to be on a par with them in terms of mobility or cognitive function assured them that they were not alone; when they saw others who were worse off than them it often boosted their confidence. For some, it was a strategy that they used in order to maintain some level of satisfaction. As one participant said, 'There are so many people worse off than me. You can always find someone who is worse off.' It almost seemed that some of them were constantly on the lookout for people who were in worse health than they were. As one said, 'I can still walk which a lot of people here can't do.' Similarly, another commented, 'I can still shuffle around, which is better than a lot of the people here.' It was even better when they could compare themselves favourably with those who were younger: 'For 90, I think I'm not bad at all. I use a stick, one stick, that's all.' And, 'There are a lot of people younger than me who can't get around.' Wheelchairs, such a clear signal of declining mobility, were dreaded by many – a fear expressed by one resident like this: 'I'm thankful to be as I am. You see so many people now in wheelchairs and they are not much older

than me.’ Those who reached a great age without losing mobility and who were able to maintain good mental health were highly regarded.

Residents compared their mental health, experience of pain, extent of mobility, sight and hearing. Even when mobility was lost there were still opportunities to make favourable comparisons. One said, ‘Fortunately my brain is OK. I know that there are others for whom that is not the case.’ However, for some, there were instances where seeing people deteriorate was very distressing. One described it as ‘the worst thing’. It acted as a constant reminder of what might be in store.

Loss of sight was feared; it led to yet more dependence and less ability to cope with their situation, both functionally and emotionally. To be made aware of those worse off was helpful in maintaining some positivity with their situation. This was illustrated by one participant who told me, ‘I’m told I’m lucky still to have some sight, because there are some people who are completely blind.’

Although these constant comparisons with each other could be regarded as mere clutching at straws, it clearly helped in maintaining a degree of wellbeing. Being surrounded by other older people does not necessarily lead to friendship or alleviate loneliness, but does appear to give older people a sense of how they are doing in relation to others at a similar stage of life and may afford them some satisfaction, as seen in the following quotation, ‘I’m no worse than anyone else, certainly no worse than my next door neighbour.’

6.5.1.8 The experience of pain

As discussed in Chapters Two and Four, and also in this chapter, pain is a frequent accompaniment of old age. It is a time in life when the pathological load increases through an increase in the number of painful conditions experienced (Ferrell et al., 1990). It was considered as a fact of life for the majority of the sample who took part in the music intervention. Many knew that there was a strong likelihood of having to deal with more pain as they aged; it was an anticipated part of the ageing process (Herr and Garand, 2001). As one participant said, ‘It’s a normal way of being, it’s

something you have to live with.' Indeed, another talked of having a new ache or pain each morning. This shared knowledge had one small advantage: it gave them the comfort of knowing that they were not alone. As one said: 'Lots of people have discomfort.' Of the total sample, 63% admitted to pain during the first interview.

Attitudes to pain varied. There were a few who talked of every ache and detailed every twinge. One, who described her pain as very severe to excruciating, said that she 'hurt all over' from her head to her toes all the time, that she was unable to lift anything, or to move, hear, or see. It became apparent that this was as much a desire for attention as anything else, as the care staff corroborated. She did have pain, but she gave the impression that she exaggerated its extent; she was slightly deaf, but conversation was not difficult; her sight was not perfect, but she was able to recognise people coming into her room. This attitude was unusual; the majority of those with pain were more likely to minimise its severity and demonstrated great resilience in dealing with it. As discussed in Chapters Three and Four, many were reticent in talking about pain. They felt that by allowing it to become the focus of their attention it might become worse. For some this was a strategy to help them cope; the less they thought or spoke of it, the less they hoped they would feel it. As one said, 'The more you think about pain, the more you get it'; similarly, others commented, 'I try not to think about it too much,' and, 'If it hurts, too bad, I forget about it.' They deflected questions about it by making such comments as, 'Lots of people have discomfort, we have to make the best of it,' or, 'I mustn't complain, there are people far worse.' This was a common strategy and helped many of them to cope. The prevailing attitude was one of resignation and acceptance. Comments like these were repeated week by week:

- 'I'm so used to it now.'
- 'I've got used to the pain.'
- 'You do get used to it, you learn to cope with it.'

- 'I'm used to pain so I don't make a big thing of it.'
- 'I've had it for such a long time, it's part of me.'

This was not quite universal. Very severe, intense pain was not easily dealt with. As one participant said: 'You don't get used to it. You can live, but when it's like this, you really feel it. Some days you just want to cry, you want to be on your own.' Another found that when the pain was at its worst, she 'couldn't be bothered with people'. In these situations, pain could be an isolating experience. However, in situations where the pain was less intense, distraction was possible: 'When I see or talk to somebody, I forget about the pain.'

On the other hand, there were participants who spoke openly about its impact on their lives. It affected their energy levels: 'If it disappeared, I would feel younger. It is exhausting, you tense up against it.' It affected mood: 'Pain makes me depressed, it's always there. When it's bad, it makes me want to cry.' It affected their activities: 'I have to cut back on things.'

The range of pain intensity was wide and the perception of it varied. As the experience of pain is so subjective, it is impossible to know what level of pain participants were experiencing when they made such comments as, 'I don't take any notice of pain.' For many of them this worked as a strategy, but there were cases where the perception of pain was so severe and overwhelming that to try and ignore it was futile.

There was therefore no single, common response to pain. Some tried to ignore it, for some that was impossible; some did not like to admit to it, for others it was a means of gaining attention; some were isolated by it, but for others, visitors acted as a distraction. Whatever the response, pain was an unwelcome presence in the majority of their lives.

6.5.1.9 The effect of the weather

Prior to the pilot studies, the effect that the weather might have on older people had not been anticipated. However, the adverse effect of the hot weather on participants during Pilot Study Two alerted me to its possible relevance. It transpired that both extremes of winter and summer weather conditions had an effect on participants. The impact of cold weather was observed in a study by Campbell and Buchner (1997). They note that just as a change of medication or an attack of bronchitis could cause a deterioration in condition, so could a spell of cold weather.

Very few participants failed to mention the effect that the weather, either hot or cold, dry or wet, had on them. It was true for all of them whether they were bedbound, sedentary or mobile. It affected both mood, pain and energy. Not surprisingly, the cold tended to lower their mood as the more mobile were less inclined to venture out and there were fewer activities organised outside the home. Comments made included, 'The cold makes me edgy,' 'The weather depresses you,' 'The [cold] weather makes it worse' and 'I don't like the cold.' During one particularly cold patch, care staff told me, 'Everyone is complaining about the weather. It affects everybody's mood.' One participant went so far as to say, 'Everything has changed this week because of the weather'.

Although these comments might be made by any group of people, the cold appears to have a greater effect on the oldest old. They feel it more, it can exacerbate pain and is something to dread. As one participant commented, 'The cold weather is coming and it affects me in the back and the legs.' Another described the fatigue she felt as she battled to keep warm.

Hot weather was more generally blamed for causing fatigue. It made them drowsy, exhausted and less energetic. One said, 'I hate all this heat. I like the cool.' They found it 'difficult to be normal' in the extreme heat and were relieved when it came to an end.

Rain also affected pain and mood. Like the cold, it restricted any outside activities. For those who tried to keep moving by walking in the gardens, or for those who enjoyed going outside in their wheelchairs, this was a loss. Long spells of poor weather led to low mood. Many residents also complained that damp conditions increased their pain; those with arthritis and knee pain were appeared to be the most affected.

6.5.1.10 Deterioration

Deterioration is an inevitable part of life for those living in care homes. Entry to a care home is itself an acknowledgement of the decline that may be regarded as another example of the loss that is such a feature of this time of life. It represents the loss of abilities, skills and functions so easily taken for granted until they start to disappear. As already discussed, they are surrounded by it; they can observe it in each other as well as in themselves. There is an inevitable question for all of them about the future. As one participant said, 'I have a little worry. What the future is going to hold and how long I can live like this.' They cannot hope for an improvement in their condition; common infections are not easily shrugged off. As one participant who had severe flu during the intervention said afterwards, 'I thought I was going to die.' Another spoke more generally when she said, 'I know I'm not going to get any better.'

For a small number of participants, there were noticeable signs of deterioration during the six-week research period. This had not been anticipated. For three of the participants, their decline was such that it led to withdrawal from the research study: one withdrew after the first week due to deteriorating health and two were admitted to hospital during the course of the study and had no choice but to withdraw. In three other cases, there was an obvious acceleration of confusion and cognitive decline. One participant was relocated to a more suitable home after receiving a diagnosis of dementia; two others had to rely on increased assistance from the care staff.

This is a distressing but inevitable part of conducting research within the care home population.

An additional theme emerged from the data and was the concern over weight gain and appearance. Rather than being the preserve of a younger generation, there were many instances of participants worrying about their appearance. However, this was not sufficiently widespread to justify its inclusion in this analysis of the qualitative data.

6.5.1.11 Summary of the experience of old age in a care home

These findings about the experience of old age reflected, to some extent, the contents of the literature review in Chapter Two, where reference was made to old age being a time of loss. The different areas of loss noted by Suzman et al. (1992) were status, independence, purpose and usefulness. Of those, loss of independence was the only one that was relevant to the sample studied here and was mentioned frequently under the heading of loss of autonomy. Usefulness was referred to, but was not relevant to a large number. Status was not referred to at all; purpose only once. It may be that at this stage of life, they had already come to terms with those losses.

Loss of memory was noted to be highly prevalent in old age. Hyer et al. (2011b) estimated that by the age of 85, 66% have memory problems. In this sample, 35% experienced a serious loss of memory and for many others it was a cause of concern and embarrassment. As discussed, the vast majority of the sample had some memory concerns and the overall percentage may have been somewhat higher than the estimations of Hyer et al. (2011b).

Reference was also made to the widespread loss of mobility at this stage of life. As mentioned, a census of the Bupa care home population carried out by Lievesley et al. (2011) suggested that nearly half of the care home population experienced severe mobility problems. In this sample rather more than that were affected: 57% required the assistance of either a walking frame or a wheel chair.

The effect that sight loss has on the general wellbeing of older people was reported with particular reference to the reduced amount of social contact that they are able to enjoy (Victor et al., 2005). However, other issues such as the lack of stimulation from previously enjoyed activities and the subsequent boredom were not noted.

Although lack of social contact was referred to as a condition of old age, little reference was made to it, except for it being cited as a risk factor for depression by Jongenelis et al. (2004). The extent of the issue was found to be much greater than the literature indicates, despite the participants living in a community. Loss of energy was also referred to, primarily as a symptom of depression. This was reflected in many of the comments. For example, 'I get tired, and then I get down.'

These general themes of loss of autonomy, physical capacity, social contact, energy and memory and the experience of pain were anticipated, although in a number of areas the challenges were significantly greater than expected. However the other themes that emerged were surprising; they were not strongly represented in the literature on old age and therefore not referred to in the literature review. These were the loss of confidence, boredom, the effect of the weather and social comparison.

Although loss of confidence is referred to in the literature review as something that could be regained through the use of music along with a sense of control and independence (Spintge, 2000), no other reference to loss of confidence as being a feature of the old age condition in care homes was found. It caused great anxiety and distress and increased as their competence decreased.

Again, although the effect of cold weather has been referred to, no references to excess heat or humidity having a negative effect on wellbeing were found in the literature. Both extremes are difficult for older people to manage, as their tolerance is lower and their physical capacity to cope with it is reduced. In both seasons, rates of ill health and mortality increase. The periods of excess warmth and cold were short compared to the overall length of the research study. For this reason,

not all participants took part in the research during the excesses of the weather and none of them encountered both extremes.

Social comparison processes were not noted in the literature prior to the data collection. However, these have been observed in previous research (Cheng et al., 2007). They have been described as an effective method for coping with disappointment when experiencing losses in later life (Heckhausen and Schulz, 1995), who suggest that by making comparisons with people less fortunate it is possible to stabilise one's perception of one's own health. Feeling superior in physical status affects the way in which older people rate their health. It may, for example, alter the criteria that define good health. Rather than the lack of illness and disability that are generally regarded as markers of good health, it could mean a lack of severe complaints or having fewer problems than peers. Depending on their situation, two people with the same condition, as judged by an objective health assessment, might give very different responses when asked for a subjective judgement of their health.

Although physiological and cognitive decline were to be expected, it was thought, prior to the study, that this would not be an issue for a six-week period. Given the health status of many of the participants, this is something that should, after all, be recognised as a possibility.

As described in the methodology section in Chapter Five, the data collection was carried out in nine care homes, all very varied in their management style and in the socio-economic background of their participants. The themes that emerged, however, were the same in each home with the exception of the effect of the more extreme weather conditions (this was dependent on the time of year in which the research took place). This unanimity of response to the experience of old age as lived in in a care home lends some grounds for confidence in the findings.

6.5.2 The opportunities for listening to music in a care home

Given these findings relating to the experience of old age in the care home, it is not surprising that both the reduction in function of care home residents, and the reality of living in the care home environment, affected the opportunities that existed for listening to music.

6.5.2.1 The lack of suitable music players

A number of factors influenced the amount of music listening that took place in each of the care homes. The most common of these, as already discussed in Chapter Four, was the lack of suitable equipment that participants possessed. Some had a radio and/or a CD player but it was common to find that they were either unable to use it, or, that it was no longer in working order. Of the total 113 participants, only 12 owned CD players that they were capable of using and that were in working order. The few that possessed radios listened to a range of stations; news programmes such as Radio 4 were popular, and for those who listened to music, Classic FM and Radio 2 were the two most commonly mentioned.

Apart from some musical events organised by the care homes, the majority of the residents had few means of listening to music regularly. There appeared to be a number of reasons for this lack of equipment. Firstly, this age group has little familiarity with CD players; they may have had cassette players in the past but these are now obsolete. The majority were fearful of 'new' technology and not confident of their ability to use it. The world of computers, music downloads, mp3 players or any other technology was talked of with a complete lack of understanding; most had no desire to access it and many were fearful of it. As well as their lack of familiarity with this world, functional limitations precluded their successful engagement with it. Sight loss, memory loss and lack of dexterity contributed to the challenges of operating the various options that would otherwise have been available. Secondly, the easy access that younger generations have to music is not something that the residents had ever experienced and, for the most part, it was not something that they expressed

any desire for. Thirdly, this generation grew up with more financial restraint; few, at this stage of their lives, would consider making what they would regard as an unnecessary purchase.

For many of them, this constraint was exacerbated by financial anxieties. There were worries regarding the payment for their overall care as well as for the smaller amounts needed for the hairdresser, for phone bills, or for the cost of postage. The participant who said, 'I really count the pennies. I don't like buying new things,' was representative of many of them. This was evidenced by the contents of residents' bedrooms. These were generally furnished with basic necessities and with no evidence of recent expenditure; luxury or extravagance was not part of their lives. The most common attitude was one of frugality. This was expressed by one participant as follows: 'I don't use a lot of money, I keep it for what I've got to pay for, my food and having a shower.' This appeared to be the case whatever the social or economic background of the participant concerned.

6.5.2.2 Complaints from neighbours

Another factor that affected participants' music listening habits was the fear of their neighbours' complaints. Seven out of the nine care homes were purpose-built. With one exception, bedrooms were small and neighbours close by; they were very aware of others' proximity. One participant talked of how, before moving to the care home she had listened to music all day but that she now felt constrained by her neighbours' adverse reactions. This became apparent when I played music to them to demonstrate the use of the music player, or to see if they liked a particular piece. One participant said, 'We'd better turn it down, otherwise there will be complaints.' Given that so many had poor hearing this was surprising. Another said, 'I'm so afraid of being a nuisance. I try to have it on quietly and then I say, Damn it all, I can't hear that.' This deterred some from listening to music and led to one participant withdrawing.

This concern for their neighbours did not appear to influence the amount of time spent watching television. There were very few participants who did not own a set and for many of them it was their

principal source of entertainment. This may have been because television was regarded as an essential part of life; there was a general expectation that everyone would watch it.

6.5.2.3 Problems of technology

As in the third pilot study, the use of the music players raised some difficulties. There were various reasons for this in addition to those already discussed. Besides the challenges of mastering a new skill, some participants were fearful of causing damage to the players and this made them apprehensive, despite the regular reassurances given to them that they were almost impossible to break. For others, poor sight added to their problems; it was difficult for them to differentiate between the buttons. As one participant commented, 'One thing that annoys me is that I can't master the music player. Half the problem is my glasses.' Lack of dexterity or strength was also a hindrance. These things, although surmountable with sufficient support and help, caused anxiety and acted as a reminder of their declining abilities. The participant who said, 'I love the music, if only I could put it on myself,' spoke for many of them.

Besides the limited functional capacity that reduced their ability to operate the players, there was a practical issue of access. This was the paucity of electric sockets in the residents' bedrooms, which sometimes resulted in a less than ideal siting of the music players. If they were not within easy reach, it added to the difficulties experienced by those who were not fully mobile; they found it hard to turn them on.

As with memory loss, these problems did not apply to the whole sample. The numbers of those requiring additional help from care staff was 43 (38%). There was a marked gender difference in participants' competence in this area: only 9% of men required help, as compared to 49% of women.

6.5.2.4 Other effects

There were some additional issues that affected regular music listening, although these were not widespread. For those who complained of extreme fatigue, there was no energy to do anything over and above their essential daily tasks; listening to music was one thing too many. Some berated themselves for not making more of an effort: 'I used to listen more. I'm lazy'; or they cited pain as sapping their energy, saying, 'It's exhausting'. This corroborates the findings of Gold and Clare (2013) who found that when the pain was overwhelming there was a decline in music listening as it demanded too much energy or concentration.

6.5.2.5 Summary

The pilot studies gave some indication of the challenges involved in researching the care home population, particularly with reference to loss of memory and difficulties with technology. However, the number of participants for whom this was an issue was greater than expected. In cases where memory loss interfered with the ability to use the music players, this led to additional anxiety and reflected the loss in confidence felt by several of the participants. Alternative ways of delivering the music could be the focus of a future research study.

The remaining issues of limited energy and the disturbance of others were not anticipated; none had been of any relevance in the pilot studies. Depleted energy is, of course, something that all older people have to contend with. However when it is overwhelming it may affect adherence to a music intervention or, indeed, to any other research procedure. These two issues, together with the problems of possible disturbance from the music volume, need to be recognised as further challenges in research with this population.

A confounding variable that might have been expected to have an influence on the intervention was the impact of any changes in medication. No doubt this did occur and in some instances it was

mentioned by participants. However, in the absence of comprehensive data from care staff, it was not possible to determine its impact.

6.5.3 The impact of the music intervention

6.5.3.1 Introduction

As Figure 6.1 (p. 219) showed, two principal themes were identified as being the principal outcomes of the music intervention; mood regulation and physiological response. Both of these were identified in Chapter Three, part two of the literature review, as being an outcome of listening to music (Västfjäll, 2002; Sloboda et al. 2001). Five subthemes were then identified, four within the category of mood regulation, and one under that of physiological response.

The four subthemes connected to changes in mood, were greater relaxation, less depression, less boredom and reminiscence. The remaining theme was the physiological response; this included reactions such as chills and tears. It had been anticipated that in addition to the data that related to improvements in mood, there would be data that gave greater insight into the benefits that participants received in a reduced perception of pain. As was detailed in Chapter Five, there was a statistically significant reduction in the perception of pain intensity as well as of depression and anxiety. However, the impact of the music on pain perception was less clear from the analysis of the interviews than was its effect on mood regulation. As has been previously discussed in Chapter Four (p.109), and in this chapter, not all of the participants wanted to discuss pain. When asked if they expected music to benefit them, 42% responded positively. However, this appeared to apply to the regulation of mood rather than of pain relief. This may be an explanation for the more limited amount of data that was collected.

Of course there were some instances when participants did talk about music's effect on pain. One participant, who was in poor health, and apparently in quite severe pain, commented, 'It does

something to me. An hour of music a day relaxes me, it does help with the pain. It helps the aches and pains in my legs.' Another participant, who admitted to constant severe and debilitating pain, reflected that the music took away some of the discomfort. The scores he provided for pain intensity seem to bear this out with a reduction in the pain during the music listening period and an increase thereafter. For these two cases, it may have been the relaxing effect of the music that helped to mitigate their perception of pain. For a third participant, it was more of a conscious decision to focus on something else and in this situation the music may have acted as a distraction.

Another example given was that of a participant with several serious and painful conditions. At the beginning of the research period, she spoke positively of the music and its ability to relax her, but did not recognise any benefits for pain. However, she subsequently commented that if the music were enjoyable, it would help to a certain extent. This may again be due to the relaxing benefits of the music.

These examples, although broadly positive of the benefits of music to pain, were not sufficient in number to be identified as a common theme.

6.5.3.2 Relaxation

Several specific comments were made about music being an aid to relaxation. As one of the participants recommended, 'You should listen to music as often as you can. It's very relaxing.' Its effect was described as 'soothing when you get uptight' or 'when you are not well' and several participants, realising music's benefits in this area, used it proactively. For example, one said 'If I don't feel relaxed, I listen to the music,' and another who was struggling to adapt to care home life said, 'Yesterday I felt especially frustrated so I put on music and it worked. It takes me to a higher level. It helps; restful and helpful.' Another participant spoke of feeling tense and how the music 'calms me a lot'. Another found that music distracted her. She said, 'Music is a distraction in a certain way. I can relax better with music.' Others commented that music 'gives some sort of

relaxing feeling' and 'is the calmest thing going'. This was true, both for those dealing with the normal day-to-day frustrations of their lives, and for those with more severe conditions. As an example of the former, one participant talked of daydreaming when listening to music and how this was a relaxing distraction from everyday life. As an example of the latter, one participant with a history of severe depression said, 'It makes me calm, relaxed, so much at ease. Magic really.' She was fully cognisant of music's ability to help her. There were also references to preferred music as being a catalyst for relaxation. As one participant said, 'The ones I really like make me relax; it makes me feel good'. Another talked about the comfort of listening to 'lollipops', her term to describe her old favourites. She said, 'We all need our lollipops to soothe us. The idea that you know what is coming next. Of course, in real life, you don't.' This ability of music to soothe through familiar music was recognised by a participant who, although he enjoyed all the music, did not know all the music on his programme. He said, 'As I recognise and get to know the music that I don't know, I enjoy them more and more. They make me contented and relaxed. They soothe the nerves if you are on edge.' This recognition of music's ability to soothe and relax was not recognised by everyone however. One rather reluctant participant, despite reporting that she enjoyed listening to the music, stated that it did not relax her. The benefits were not universally recognised; it was more of a help to some than to others.

Being able to relax is connected to changes in mood and it is difficult to differentiate between the two. As one participant said, 'I liked the music, it helps me relax and keeps my mood up.' The two often go together. However, they are treated separately here and simply reflect the different language participants used to describe music's effect.

6.5.3.3 Positive mood

Numerous comments were made relating to changes in mood as a result of listening to music. Some said that it cheered them up; others described it as 'uplifting'. One simply said, 'It has helped my mood very much.' More specifically, one participant commented, 'When I'm down, it's quite a

good release to listen to music, it makes my day.' Another made a similar comment about changes made to her mood; she said, 'When I hear the music that I love, I change, I change.' One participant, whose wife had recently died, and who had, as a result, moved into a care home, said 'it [the music] brightens things up a lot. The composers must be psychologists because the music makes you happy.' Another talked of music taking away the loneliness and said, 'When the music is on, it's OK.' Some participants had very precise views of the particular music that affected them. One cited Bach's music as being particularly effective: 'I love Bach, he has an effect. If I am down I listen and he pulls me out. It changes my mood.' She was not alone; Bach was mentioned by a number of others. One said, 'You can always rely on a bit of Bach to cheer you up'; and again, 'I always love Bach, it's always satisfying.' His organ music was given particular mention by one as a guarantee for mood regulation. There were other specific composers or pieces of music that were mentioned. For one it helped to play Handel: 'it lifted my depressed mood'. For another, listening to Mozart caused a 'momentary lifting of the spirits'. For another it was the 'Hymn to St Cecilia' by Benjamin Britten. This was the favourite piece of a participant suffering from Parkinson's disease. The music distracted her from her worries about her declining health.

Others also mentioned the distraction from everyday life that music could provide. As one participant said, 'If I have music, I don't think about the worries about the family.' For some, the music took them to another world. As one commented, 'It gives you a lift completely, something out of this world.' Similarly, another spoke of how the music 'Lifts one out of one's own thoughts to something beyond'. Perhaps the man who said, 'It's been absolute heaven' was also referring to this phenomenon. A woman with strong religious convictions made a similar point. She found that when listening to the music of Byrd, she was removed from the everyday; the music was more than entertainment, for her it was an act of worship. Another participant also found that music distracted her from worries but she did not regard this as necessarily being a good thing. She said, 'If I'd had anything on my mind, I would have had to switch it off or forget what I was worrying about.' She wanted to keep worrying. The overwhelming majority, however, welcomed the focusing of their

attention away from their daily troubles. Perhaps the participant who said that the music 'makes me know that things are not too bad' expressed what so many of this population need to feel.

As before, although the majority recognised and experienced a change in mood in response to the music, this did not apply to all of the participants. One of them, who had enjoyed playing the piano in the past, and who enjoyed taking part in the research and listening to the music commented, 'It doesn't really affect me, it's just pleasant to listen to. It doesn't change my mood'.

6.5.3.4 Reducing boredom

As discussed earlier in this chapter (p.236), boredom was commonly experienced in the care home. For those for whom boredom was an issue, the music appeared to have been of help. There were several who spoke of not being bored because of the music. One man, new to the care home, and recently deprived of his main interest of carpentry, was seeking out new interests. The music intervention, to a large extent, filled the gap and sparked an interest in discovering new music. Another new resident of a different care home was struggling against the limitations of her situation. She found that listening to the music programme helped her to cope; the following week, she added to this by saying that she was not bored because she had the music. Another participant, who never admitted to being bored in response to the interview questions, said, 'It helps the day go past, you feel better if it's music that I like [sic].' Several participants found that the time spent alone in their bedrooms was isolating. However, meeting with others in the communal areas was not always the answer. Some were not 'good mixers'; others had difficulties with their speech or their hearing. Many of them, therefore, found it preferable to be in their bedrooms. In some cases, the music relieved the isolation. As one said, 'it [the music] makes a difference if I'm in my room on my own.' These improvements echo the findings of a qualitative study by Hays et al. (2002) who found that older people who were actively involved in music found great relief from boredom.

6.5.3.5 Reminiscence

Many participants spoke of the way in which music brought back memories of past situations. For several, this was a positive experience. One participant listened to the musical, 'Oklahoma', which he had seen in his youth. He described how it brought the whole evening back to him; he could remember the stage set, the singers, the costumes. He was entranced. Other comments made included: 'Music makes me emotional and brings back happy memories,' and, 'The music takes you into part of your life, childhood, memories.' For one participant, the memories evoked through the music 'wiped the years away'. Another, awaiting news of a biopsy, said, 'It makes you think of past times when you were happy.' Another compared the memories that music conjured up as being like friends. She said, 'It's as though people are around. Yesterday I felt alone. Then I put on the music and the feeling went. There were memories, people.'

There were some musical choices that were possible triggers for a painful response. For example, one man listened to his late wife's favourite piece of music, Tchaikovsky's piano concerto no.1 in B-flat minor (Op. 23). It might have brought him sadness, but for him, in this situation, it brought joy.

For others, however, there were some reactions that were filled with pain. One participant, described how, since her husband's death, she had been unable to listen to music that reminded her of him; she described it as hitting an emotion that she didn't want to go to. During the music intervention, some of the music selected for her programme reminded her of close friends or of relatives who had recently died. One piece had been played at her sister-in-law's funeral and she said that it broke her heart.

For another participant, the memories were a mixed blessing. She was unhappy in the care home and music reminded her of happier times. She said,

Music to me, it conjures up so many memories. Memories are not always good, I suppose, because music like that makes you think of the past, of the days gone by. That depresses you. You think of all

the times that you have spent, the pleasures that you have had, and these days, what is there to look forward to? Nothing.

She was not alone in expressing the pain felt on looking back to better times. Another participant said, 'Musical memories are attached to when I was in my prime, thoroughly enjoying myself, and now it's all gone.'

Some were able to be very specific when discussing music for their programmes. For example, one participant said that she did not want any Gilbert and Sullivan. This was because it evoked memories of her childhood and she did not want to go there. It was not apparent whether this was because of positive or negative memories of that time. Another explained her weepy reaction by saying, 'Memories are not good sometimes, it [sic] makes you think of the past.'

For one participant, music elicited both good and bad memories. On the one hand, some music reminded him of the death of his first wife and of his mother, with whom he had had a bad relationship; on the other, other music brought back memories of meeting his second wife, a very positive memory for him.

This capacity of music to arouse past memories has been described as being one of its main roles (Boyd and Campbell, 1992) and has generally been viewed as a positive experience, contributing to the significant reduction of depression (Ashida, 2000). As Bunt (1996) suggests, it is not just the past memories that music evokes, but also the emotional context of those times; the memories may well be painful. It was not possible to predict the response that participants had. Some enjoyed being transported back to another time, a time perhaps of youth, love and hope; others, on the other hand, preferred to avoid the music that reminded them of what they could no longer have. This has implications for the wise assessment of music preference and the provision of music programmes.

6.5.3.6 Physiological responses

There were a number of participants who spoke of the physical effects that they observed in themselves when listening to the music. Foot and hand tapping were common responses. One participant, who had been a dancing teacher, said, 'It gets my feet tapping, it makes me feel alive.' On another occasion, she said again, 'When I hear the music my feet begin to go.' This was someone confined to a wheelchair, who spent the majority of the time in her bedroom. Another participant, who had had a stroke and who was also in a wheelchair, experienced a similar reaction. She said, 'I want to dance to it and wave my arms in the air, move the chair and pretend I'm dancing.' These physical responses were particularly noticeable in participants who had limited mobility. The desire to dance was often expressed although for many of them this was not physically possible. However, the music allowed them an outlet for some movement, however small, and it made them feel more active. Another participant, also with very limited mobility, selected some military marches for her programme; they were a reminder of her association with the army in her youth. She described how her feet would tap to the music and the care staff commented favourably on how the music distracted her from her preoccupation with her physical limitations.

There were other physical reactions. A few participants described the 'chills' or 'tingles' that they experienced when listening to music. One of them, a former violinist, was able to identify the particular moments in the music that acted as the trigger for these responses.

For some, the music induced tears. For one, the catalyst was Mendelssohn's violin concerto in E minor (Op. 64); for another it was the Rachmaninoff's 'Rhapsody on a Theme of Paganini' (Op. 43). In some of these situations crying was perceived as being a positive response, but for others it was not. Too much emotional response was overwhelming for some. As one participant said, 'I don't like it when it makes me cry, it's too moving.' Another identified 'sentimental' music, often what she

called the 'old music' as being the trigger for her tears. She said that it made her howl and that this was not what she wanted to listen to. For another it was 'these war songs'.

These responses, for the most part involuntary, demonstrated the powerful effect that music had on them. In most cases, the responses were positive, and, at the very least, distracted listeners from their daily situations.

6.5.3.7 Summary

Music was perceived by the participants to have had a number of beneficial effects. This was particularly noticed in relation to the improvement of mood, with more relaxation, less boredom, positive physiological responses and the evocation of memories. The limited data on the effect of music on pain perception made any conclusions about the participants' own perceptions of this important area of the research study impossible to draw.

6.5.4 Further investigation

Having investigated some of the ways in which the research procedure was affected by the cognitive and physiological decline of the participants and, having observed some of the effects of the music intervention, attention was then turned towards the responses of a smaller number of participants, in order to identify possible reasons for the variation in responses that they made to the intervention. As Wigram and Gold (2013) observed, no single therapy can help everyone. It was therefore hoped that by narrowing the focus of the study to a small number of participants, it would be possible to identify those for whom listening to music would be of help. Nine participants were selected; three who showed a highly positive response; three who showed a lesser, but still positive, response and three who showed either no change or an increase in one or more of the three dependent variables.

Each data set was examined in order to identify those who fitted the three ranges of response. Participants were selected who, as well as fitting one of the three criteria, were varied in background, location and physical and cognitive function.

To reflect the gender balance of the sample (Males, $N = 31$; Females, $N = 82$), three of the participants were male and six female. They were drawn from six of the care homes and experienced a range of conditions: Parkinson's disease, diabetes, angina, confusion, sight loss, severe pain, stroke, depression, arthritis, fibrosis, osteoporosis, heart disease and muscular system atrophy (MSA). Each of the nine participants adhered to the music intervention without technological difficulties. Answers to the questions posed in the interviews appeared to be a true reflection of each participant's experience.

6.5.4.1 Analysis

As before, notes and recordings made for each of the nine participants were scrutinised in detail. Where available, carer's assessments of their condition were taken into account. Group A represented those who showed a highly positive response, Group B represented those who showed a lesser response and Group C represented those who showed no response.

6.5.4.2 Results

6.5.4.2.1 Group A

The demographic details of the three participants selected to represent this category are tabulated in Figure 6.2 below. As before, participants have been given pseudonyms.

	Age	Gender	Marital status	Ethnicity	Former employment	Physical condition
Richard	76	Male	Widow	White British	Unknown profession	Parkinson's disease
Pippa	96	Female	Widow	White British	Nanny	Blind, fibrosis, osteoporosis.
Terence	70	Male	Single	White British	Medical corps Nurse	Diabetes, arthritis, angina.

TABLE 6:2 DEMOGRAPHIC DATA OF GROUP A

These three participants had little in common; their backgrounds and experience of life were very different. Although details were sparse, it appeared that Richard was university educated, had lived

in Kensington and Chelsea for much of his life and, according to Google, had been chair of trustees with Kensington and Chelsea Social Council and an active member of the Liberal Party. Details of Pippa's life were also meagre. Her childhood had been spent in Rye, East Sussex. After her marriage, she had come to London where she worked as a nanny. She had one son. Terence had led a more transitory life. Born in Ayr, at various periods of his life he had lived in Balham, London and Glasgow. His 22 years in the army had seen him based in many locations, both in the UK and overseas. Whilst in the army, he had worked in the medical corps and subsequently as a nurse. He had experienced the tragedy of the death of his fiancée and remained single. Both Richard and Terence were the youngest in their respective care homes, whilst Pippa was the oldest in hers. All had debilitating health conditions but these varied in the impact made on the functions of their daily lives. They also differed in their experience of music and current attitudes towards it.

Further details of each of these three participants are now given, including their response to the music intervention and its effect on them. Possible reasons for this are then discussed.

Richard was limited in his mobility due to the effects of Parkinson's disease. His balance was poor and he required a walking frame. As well as his physical disability, he suffered from considerable confusion and memory loss. This was demonstrated by his inability to remember his age, date of birth, previous employment or the length of time spent in the home. In spite of those limitations, he was able to respond to questions and engage in conversation.

Although pain did not seem to be his most significant problem, he spoke about discomfort in his legs and a fall during the course of the research period gave him some back pain. At the first interview he was not sure if he did have pain, and said, 'I don't think I have.' He talked more specifically about it over the course of the six weeks.

His condition frustrated him, particularly his inability to walk unaided. 'What I need is to be able to walk,' he said, and expressed great determination to do his prescribed exercises. He admitted that

his lack of ability to 'do certain things with his body' made him grumpy. His mood was also affected by general worry and anxiety. He found it difficult to identify its cause, saying, 'I worry about something but I can't think what it is.' He grew anxious about daily activities. For example, he worried about what was going to happen next; he could not remember.

A number of the themes identified as being representative of this sample were relevant to Richard. Most pertinent to him was the loss of autonomy and of memory. Baseline assessments of pain, depression and anxiety showed that he had no pain, a clinically significant amount of anxiety and low levels of depressive feelings. This was largely corroborated by care staff, who were of the opinion that he did not experience pain or depression, but had some anxiety.

Richard was assigned to Group Two. During the first three weeks, when in the control condition, the quantitative data show that his perception of pain increased and that both his anxiety and depression levels were the same at baseline and at the end of week three, although they showed some fluctuation in the intervening period. Over the next three weeks, when part of the experimental condition, results showed that Richard's levels of pain, depression and anxiety reduced: from five (moderate pain) to one (no pain); from 22 (clinically significant anxiety) to 13 (very low); from 14 (mild depression) to 11 (none). There were no obvious changes in his circumstances during this period that might account for this reduction other than the introduction of the music.

As far as music was concerned, he was able to talk about his previous experiences of choral music although it was not possible to determine whether it had been in the capacity of listener or performer. When asked about his musical preferences, he was able to select the genre of classical music and gave several names of composers that he liked. He considered that music was very important to him and thought that it would be of benefit. Despite his obvious interest in music, he had no means, like so many others, of listening to it in his room.

Richard had a strong response to the music from the beginning. Despite his memory problems, he had no difficulty in operating the music player and, as far as it was possible to tell, his adherence to the daily listening programme was good. After the first week, when asked if he had enjoyed listening to the music, he responded, 'The music has been absolutely marvellous, absolute heaven.' He was also able to identify a piece that he had particularly enjoyed and commented that the selection was 'a very good choice'. He proceeded to turn the music player on and joined in the singing. His enjoyment of the music and its effect on him was noticed by his family, who commented favourably about it to the care staff.

Pippa, aged 96, was one of the older participants to take part in the research study. She too had very limited mobility, and was reliant on a walking frame when she needed the bathroom. She suffered from fibrosis, a lung condition which caused shortness of breath and a persistent cough, arthritis in multiple sites and was also completely blind. This latter condition made her very dependent on the care available. Most of her time was spent in her bedroom chair.

Pain was a constant presence, which she described as a 'normal way of being', and as 'something that you have to live with'. It varied in its intensity and she took prescription painkillers. It appeared to affect her mood, particularly when it was more severe. Her mood was generally rather anxious and she described herself as a worrier. Her memory was generally quite good.

As was the case with Richard, some of the themes identified as representative of this sample, were present in Pippa. Principal among these was her loss of autonomy. This was particularly acute on account of the combined loss of mobility and sight. There was very little that she could do unaided. A carer arrived at mealtimes to help her eat and staff operated the music player. It is not surprising that she commented, 'I wish things were as they were,' and 'I think of all the things that used to be.' Although she did not speak of it herself, another resident remarked on her quite recent decline in mobility and her sight loss. Doubtless, the deterioration was challenging to accept. She also spoke of the fatigue caused by the hot weather at the time. Baseline assessments of pain, depression and

anxiety showed that she had strong pain levels, clinically significant levels of anxiety and low levels of depression. No care staff reports were available.

Pippa was assigned to Group One, therefore experiencing the intervention over the first three weeks. During that time, results showed that her levels of pain, anxiety and depression reduced: from five (strong pain) to four (moderate); from 24 (clinically significant anxiety) to 18 (below the threshold); from 13 (mild depression) to 11 (none). Again, there were no obvious changes in her circumstances during this period that might account for these reductions other than the music intervention.

As far as music was concerned, Pippa had listened only occasionally but had some experience of music prior to her marriage. She was able to make some suggestions for the music programme and these included some war songs, some dance music and some church music. She described music as being quite important and did not know if it would be of benefit.

Although fully able to answer the questions put to her, Pippa did not elaborate much. As to her enjoyment and response to the music programme, she said that it was an enjoyable experience, she mentioned a specific piece of music that she had particularly liked, but she did not comment further about any emotional response that she might have had. It was not clear whether this was because she could not remember or because it was not something that she felt able to speak about.

It may be of note that for the first two weeks of the interviews she admitted to quite strong feelings of loneliness and boredom. This decreased over the remainder of the intervention and suggests that the music played a part in alleviating those feelings. For the final three weeks, when the music listening period was over, her levels of pain perception, anxiety and depression increased.

Terence, aged 70, was the youngest of the participants in his care home. On observation, he appeared to be in reasonable health, mobile and with no cognitive loss. However, this was not the reality. Although he was not reliant on any walking aid other than a stick, his ability to walk a reasonable distance was limited. He suffered from diabetes, angina, and arthritis in multiple locations. As well as these physical ailments, he also suffered from depression.

Pain was a constant presence in one or other area of his body, causing distress. This had multiple effects on his mood, mobility, sleep and energy. He was able to find distractions for the pain during the day and cited reading and music as examples of this. However, he said that during the night, 'There's nothing to take your mind off it.' He presented very high scores on the IPT for pain intensity. The combination of pain and low mood affected his daily routine and he found little incentive to get up each morning. On one occasion he said that he would be happy not to wake up.

Like Richard and Pippa, some of the themes identified as representative of this sample were relevant to Terence. However, he was one of the very few for whom loss of autonomy did not appear to be relevant. Although he felt constrained by a deterioration of mobility, he was aware that his difficulties were few in comparison with his neighbours. Suffering from relatively minor losses, Terence was able to carry out all the necessary activities of daily living without assistance. Nor did he suffer from any material loss of memory. However, he did experience a considerable lack of energy. On numerous occasions, alternative appointments had to be made for the interviews due to his need for further sleep. He was also very aware of the effect that the weather had on his mood and pain levels. He found that wellbeing was lower in bad weather and opined that, 'When the weather is better, you feel better.' Although his own evaluation of his condition was very real to him, the care staff assessed Terence as having fewer problems. They described his health as being good, rated his pain as mild, his depression levels as being low and thought that he only had some anxiety.

Like Pippa, Terence was assigned to Group One, thereby experiencing the intervention for the first three weeks. During that time, results showed that his levels of pain, anxiety and depression reduced: from six (severe pain) to two (mild pain); from 25 (clinically significant anxiety) to 16 (moderate); from 19 (moderate depression) to 12 (none). Again, there were no obvious changes in his circumstances during this period that might account for these reductions other than the music intervention.

As far as the music was concerned, it was an important part of his life. In his youth he had played the cornet in the Boys' Brigade and enjoyed singing to himself. He now listened every day and could name specific composers and pieces that accorded with his preferences. Given this information, it was surprising that he said that music was only 'quite important' to him. This was notwithstanding the fact that he said that it was more important than when he was younger, that he was more aware of it and that he was of the view that the regular listening would be of benefit to him.

Like Richard, Terence had no difficulty in operating the music player. After a week of listening to the music, he stated that he was 'thoroughly enjoying it'. He also commented on the effect that it had on his mood: 'When I'm down, it's quite a good release to listen to music.' However, night time was often the period when he felt most low and most aware of the pain. He wanted to turn the music on but worried that his neighbours would be disturbed. He was able to identify the performers that he particularly enjoyed, such as Buddy Holly and Johnny Cash.

As these findings show, these three participants were all affected positively by the music programme provided for them over the three-week period. Each of their responses, both individual and collective, are now discussed further to determine whether there are any relevant factors that contributed to that response.

All of them had had some experience of music in the past. Richard enjoyed choral music and spoke of going to concerts in which his son, an able tenor, was singing. Pippa grew up in a household where her mother would play the piano and she herself sang in a group or choir in the period before her marriage. Terence, as already stated, played the cornet and enjoyed singing. Music had been an enjoyable feature at some stage of all of their lives and was something that they looked back on with affection. It may be that this was a good foundation for their positive response to the intervention.

All three of them were able either to work the music player themselves, or in the case of Pippa, had a member of the care staff who was reliable in turning it on for her each day. None of them, therefore, experienced any anxiety over the delivery of the music programme. They adhered to the demands of the programme and there were no technological problems.

One of the key components of the research procedure was the importance attached to finding out participants' musical preferences. Richard, despite his memory problems, was able to be sufficiently clear about his preferred music. His enthusiastic response (such as, 'It's been absolute heaven') showed that the selection made reflected his own preferences. Likewise, Pippa was able to talk quite clearly about the music she liked. Much of her choice revolved around music attached to important parts of her life: the war, dancing and church. Amongst other things, she asked for some of the old war songs, Strauss waltzes and well-known hymns and anthems. Terence was very specific about the music that he wanted. He had three favourite classical composers, several specific pieces and some performers, all of which were included in his programme. He was also enthusiastic about the selection, saying that it made his day. It is suggested that the success in establishing the participants' musical preferences was an important contributor to the results.

There are some other considerations. Both Richard and Terence were optimistic about the benefit that the music would have. This suggests that they were predisposed to expect some improvement

in their condition. Pippa did not know if the music would benefit her. It may be that at the age of 96 she had come to the point in her life where she did not expect anything to improve.

Neither Richard nor Pippa had the opportunity prior to the intervention of being able to listen regularly to music. This programme gave them that opportunity. Its success was shown by the response of their families who each observed the pleasure it gave them and subsequently made some provision for them to continue listening. Richard and Pippa had very little autonomy in their lives. For both of them, this intervention provided that. Richard's ability to operate the music player meant that he could put it on whenever he wanted to. The fact that both of them were able to choose their selection of music gave them some sense of power in their life. For Terence, who was not so dependent, these factors were less of a consideration.

For all of them, the music programme provided a distraction. Pippa was sometimes bored and lonely; the music may have alleviated that. For Richard, the music appeared to distract him from the constant anxiety he experienced over what he should be doing next or where he should be going. It allowed him to relax. For Terence, taking part in the intervention gave him another interest; he entered it wholeheartedly, talking about it with other participants, with whom he compared notes. It allowed him to become less absorbed with his mood and his ailments.

Of additional interest is the fact that each of the three participants had clinically significant baseline levels of anxiety. The dependent variable with the greatest decrease in each of the three participants in this group was anxiety.

Several factors may therefore have contributed to the positive response demonstrated by these three participants.

6.5.4.2.2 Group B

The demographic details of the three participants selected to represent this category are shown in Figure 6.3 below.

	Age	Gender	Marital status	Ethnicity	Former employment	Physical condition
Bernard	87	Male	Widower	White British	Lorry driver	Heart disease
Gertrude	85	Female	Widow	White British	Office worker	Stroke
Millicent	85	Female	Widow	Italian	Restaurant manager	Frailty

TABLE 6:3 DEMOGRAPHIC DATA OF GROUP B.

These three participants were of similar ages, had all been widowed and were all born in London. Bernard was a Cockney and, like Terence, had joined the medical corps in 1943 where he stayed for 20 years. After leaving the army, he became a lorry driver. Details of both Gertrude's and Millicent's lives were sparse. Until her marriage, Gertrude had worked in an office. She was conscious of not having been sufficiently able to have worked as a secretary. Millicent had been born to Italian immigrants who ran a restaurant. This is where she worked, later taking it over and managing it for ten years.

Bernard and Gertrude were considerably incapacitated by their conditions, far more so than Millicent, who was not suffering from any reported physiological disorder but she was frail and confused. Neither of the two women listened to music often as they did not possess a functioning

music player, and neither was able to give very much information as to their preferences. Bernard did own a CD player but was not a regular listener. He was, however, able to talk about the music that he enjoyed.

Details of the three participants are now given, including their response to the music intervention and its effect on them. Possible reasons for this are then discussed.

Bernard was of particular interest because shortly before the start of the intervention he had decided to cease all medication for his various illnesses, which included high blood pressure and a serious heart condition. He had undergone 12 operations over the preceding three years and had decided to 'give up on everything'. He believed that he would be dead within two months. Although seriously ill, he had not completely lost his mobility; he was able to use a walking frame to go short distances. Of more impact on his day-to-day living was the low mood that he reported, probably increased by the fear that he had of dying and the noticeable deterioration in his health (he talked of 'going downhill').

Pain was reported as 'strong' and contributed to his low mood. His appetite was currently poor which resulted in significant weight loss. He suffered from extreme fatigue, found it difficult to concentrate and, as a result, was not able to read. These conditions contributed to the loneliness and boredom that he reported. During the first interview he told of how he had sent himself some flowers. Unusually, amongst this sample, he did not have any noticeable or reported memory loss.

Some of the themes identified as representative of this sample, were applicable to Bernard. Most pertinent to him were the loss of energy and the deterioration attributable to his illness. Although not confined to his room, he was frustrated by his poor mobility. Baseline assessments of pain, depression and anxiety showed that he had strong pain, a moderate amount of anxiety and considerable levels of depressive feelings. This was corroborated by the care staff, who were of the

opinion that he was in poor health, experienced moderate pain, quite a lot of depression and some anxiety.

Bernard was assigned to Group One, therefore experiencing the music intervention for the first three weeks. During that time, results showed that his levels of pain, anxiety and depression reduced: from six (severe pain) to two (mild pain); from 21 (almost at a clinically significant level of anxiety) to 20 (very little reduction); from 25 (moderate to severe depression) to 15 (mild). There were no obvious changes in his circumstances during this period that might account for this reduction other than the introduction of the music.

During the remaining three weeks, when the music-listening period had come to an end, results showed that Bernard's levels of pain increased (from two to five); his anxiety increased to a greater level than at the start (from 20 to 25) and his depression reduced very slightly (from 15 to 14).

As far as music was concerned, Bernard considered it 'to be a must' and regarded it as very important to him. However, prior to the intervention, he did not listen frequently, despite having a CD player in his room; he never listened to the radio. Listening to the choir in the chapel was the only instance that he mentioned of appreciating music. It may have brought back childhood memories of singing in a church choir. Despite this relative lack of current musical interest, he was quite specific about the music that he wanted in his programme – and also some of the music that he did not want. He also thought that it would be of benefit to him.

When the music programme started, he had no difficulties in operating his CD player. He appeared to enjoy the programme and was able to name pieces that he had particularly liked. He said that it had been good to listen when he had nothing to do, and played them again and again. By the second week, he had asked for another CD and also started to look for his own CDs. In the last week of the music, he said that the music made him feel 'more alive'.

Gertrude was in a care home as a result of a stroke, which left her without the use of her left arm. She had no mobility due to arthritic knees and legs and spent the majority of her time sitting in a chair or wheelchair. She was frustrated and annoyed, stating, 'I don't walk, I can't stand.' There was also the frustration of not being able to do more simple things such as turn on her CD. This had never been used. She was reliant on care staff for many of her daily needs and had to submit to their timetable. She suffered from continual pain, which grew to be excruciating at night time. This may have been exacerbated by fear. She said, 'I dread going to bed.' The intense pain affected her sleep, sometimes so much that she didn't sleep at all, and caused severe fatigue. She was unable to carry out many normal daily functions, due to the restriction of movement of her legs and left arm, and was therefore very reliant on the care staff. She found this intensely frustrating and suffered from low mood and low self-esteem. On one occasion she said, 'I think I'm just a non-person really.' There was little that she could do to pass the days and said that, 'I can't read now, I just can't concentrate.' The only entertainment open to her was watching television but she commented, 'I get bored with television. But when I switch it off, what have I then?' As she said at the last interview, 'I don't do that much with my life'. Although the care home arranged activities, she seldom joined in, saying, 'The social things are not often what I want to do.' On one occasion she attended a lecture but was frustrated when she found it difficult to hear what was said.

A number of the themes identified as representative of this sample, were applicable to Gertrude: severe loss of autonomy, of energy and social contact. She also disliked the hot weather. However, like Terence and Bernard, she was one of the very few in the sample that had no noticeable memory loss.

Gertrude was allocated to Group Two and therefore experienced the music during the second half of the research study. At the end of that time, results showed that her levels of pain, anxiety and depression, despite fluctuating during the three weeks, either stayed the same or reduced slightly: from one (no pain) to one (no pain); from 22 (a clinically significant level of anxiety) to 20 (very little reduction); from 13 (mild depression) to 12 (very little reduction). These scores appear to be

surprising given the amount of pain and low mood already discussed. However, the pain scores of the first three weeks were higher (up to five) and it was during the night that it became unbearable. At week five, she spoke of having slept through the night and then described the pain during the interview as 'just noticeable'. During the last interview she said that the pain at night had greatly improved.

As far as music was concerned, Gertrude had been in a singing group at some stage in her life and talked about going to concerts at the Albert Hall. Although she sometimes listened on television, she was not able to use her radio or CD player and therefore had limited access to music. Even though she had had little recent access to music she said that music was very important to her but was not sure whether it would be of benefit. Despite that, she was able to give several suggestions for her selection of music. Once she had started to listen to her programme, she was thrilled, but made no particular claims about its effect on her, other than to say that she enjoyed it. However, during the last interview, she observed, 'I'm aware of music and it does affect me. It sounds stupid but I get a swelling in my bosom when I listen to music.' She particularly loved Mendelssohn's violin concerto in E minor, which she said 'brought me to tears'. She also remarked that 'If you can't dance physically, you can move inside.'

The music was something that made a difference to Gertrude's life. However, there were some external events during weeks five to seven that may have masked some of the potential effects of music on her mood. There was a serious problem with her family which reduced her to tears over two of the three weeks and which required the involvement of the care staff. She experienced a further blow when the sale of her house fell through.

On first meeting Millicent, she seemed in reasonable health; frail, in need of a walking frame, but able to keep mobile and join in with some of the activities of the care home. She complained of some pain in her chest, knees and ankles. These caused her some degree of distress, but did not, to her dismay, receive very much attention from the care staff. She found it hard to accept the

increasing effort that it took to get around. A lifelong Catholic, she said, 'For as long as I can, I go every day to Mass. I have to go on pushing myself.' On one occasion when she mislaid her walking stick, she refused to go anywhere; she was fearful of falling. Of more obvious concern was the extent of her memory loss, which caused her considerable distress. She couldn't, for example, remember her age. She thought it was 'right at the top of eighty'. She was in fact 85. She would put things down and not remember where they were. She would regularly accuse the staff of stealing her things, rather than accepting the fact that her memory was letting her down. Like Richard, she worried about what she should be doing next.

She also worried about the future and further deterioration. She knew that 'things get worse'. She particularly feared further loss of mobility, saying, 'I get frightened that my legs will get worse and they will have to come off.' She did not want to continue living if this happened: 'I want to close my eyes and go – after Christmas with my family. I'm a good age, I don't want to get to a hundred.'

She resented the constrictions of her life in the care home, saying, 'I can't go out on my own, they don't let me out'; but she knew that she was unable to manage on her own. Despite this, she did not make life easy for the staff with her accusations of theft and negligence.

Some of the themes identified as representative of this sample applied to her: particularly noticeable were the loss of autonomy, mobility and memory.

Millicent was assigned to Group Two, receiving the intervention in the second half of the research procedure. At the end of the listening period, results showed that her levels of pain had increased, but that levels of anxiety and depression decreased: from four (moderate pain) to seven (quite severe); from 39 (severe anxiety) to 24 (still clinically significant); and from 16 (mild) to 13 (mild). The trends were reversed during the non-listening phase with a very small decrease in pain, but a large increase in anxiety and a moderate increase in depression.

As far as the music was concerned, Millicent had some background in music, having played the piano as a child and having enjoyed singing. She said that she used to listen frequently to music at her home, but since arriving she had been unable to listen at all because she had no music player. She had little idea of what music she would like to have on her programme, except for saying that she liked 'the old songs'. She thought that music was important but wasn't sure whether it would be of any help to her and that listening every day might be a bit much.

When the music programme began, she was delighted and excited that she had something to do. It seemed to distract her from her concerns. She liked to join in with songs and commented that 'music has had very good effects on me. I enjoy it.' It was difficult to tell how much she had listened as she was not able to remember.

As these findings, both quantitative and qualitative, show, these three participants were all affected positively by the music programme provided for them over the three-week period, but to a lesser degree than those in Group A. Each of their responses, both individual and collective, are now analysed further to determine whether there are any relevant factors that contributed to their response, and whether there was anything that was impeding the positive effects of the music programme.

As with those in Group A, all had some experience of music in their past. Bernard had sung in a church choir in his youth, Gertrude had been in a singing group and attended concerts, whilst Millicent had played the piano, enjoyed singing and before moving to the care home had been a frequent listener to music. As with the first three, none of them was actively involved with music, but referred to it as being enjoyable. As before, this was a good starting point.

When asked about whether the music would benefit them, only Bernard thought it would; Gertrude and Millicent were ambivalent. They were prepared to take part, but neither was overly enthusiastic. Millicent wondered if 'every day might be a bit much'.

Group A, as discussed, were able to be very clear about their music preferences. In this group, both Bernard and Gertrude were able to provide quite specific details and were thrilled with the selection. Millicent, on the other hand, was not able to give much information other than to request some of the 'old songs'. However, she was pleased with the collection.

None of the three were current listeners. Bernard possessed a CD player but had lost the habit of listening either to CDs or the radio. It may have been that his depressed mood inhibited his motivation to do anything. Neither Gertrude nor Millicent had music players or radios and therefore had no opportunity to listen. Bernard showed increasing interest over the music-listening period, asking for another CD, playing them again and again, comparing notes with Terence, his friend and neighbour, and started to look at his own collection of CDs. He found it an antidote to boredom and said that it made him feel more alive. Given his expectation of imminent death, this was a big change for him. Gertrude was also enthusiastic and said that she listened for most of the day. For both her and Bernard, the music resulted in a clear difference to the way that they spent their time. For Gertrude it resulted in less television, for Bernard it provided a topic of conversation and something to take his mind off both his present and his future. Millicent was pleased with the programme and saw it as something new that she could do. She loved to join in with the songs.

Loneliness and boredom were issues for all of them. When asked about it, both Bernard and Millicent admitted to considerable levels of both. Gertrude said that she was content with her own company but also talked of being bored with watching so much television. For these three participants, it would seem that the music alleviated the boredom in their lives and, as with Group A, gave them an interest and something that they could control themselves.

There were one minor technological problem in that not all the songs downloaded onto Gertrude's memory stick; this was later resolved but was frustrating for her. Both she and Millicent needed help with operating the music player, but this did not appear to be a problem.

In the case of Gertrude, there was a serious family issue during the period of the music intervention that was deeply upsetting to her and consuming of her time and attention. This might explain the spike in depression scores in the middle of her music programme and may also provide some explanation for the small amount of measured change.

In summary, many of the characteristics of the first group were the same as for the second. They all had some past experience of music, none of them listened to music regularly prior to the intervention, the music selection was well received and adherence to the programme appeared to be good. The range of music that they chose was quite wide ranging with no particular genre appearing to be more effective than any of the others.

It is hard to find causes for the smaller changes in Group B. The two groups were both characterised by similar levels of pain (moderate to strong), quite high levels of anxiety and mild to moderate levels of depression. The greatest change was apparent in the case of Bernard, both in terms of a significant reduction in the levels of depression and also in the growing interest he showed in the programme, which made him feel 'more alive'. Gertrude and Millicent showed less change. In the case of Gertrude, there were family reasons. It may also have been the case that as both of she and Millicent were reliant on the care staff operating the music players, their adherence to the programme was less than had been supposed.

If account had been taken only of the qualitative data, it would not be possible to say that those from the Group A were more deeply affected than those in the Group B.

6.5.4.2.3 Group C

The demographic details of the three participants selected to represent this category are shown in Figure 6.4 below:

	Age	Gender	Marital status	Ethnicity	Former employment	Physical condition
Amelia	70	Female	Single	Scottish	Nun	Stroke
Josephine	92	Female	Widow	White British	Charity work and housewife	Parkinson's disease.
Mathilda	76	Female	Single	Irish	Beauty consultant	MSA, arthritis

TABLE 6:4 DEMOGRAPHIC DATA OF GROUP C

These three participants came from varied backgrounds and pursued different careers. Born in Scotland, Amelia had followed her vocation to be a nun. At the age of 21, she came to a convent in Hammersmith where she had worked as a nurse. This was the same institution in which she was now being cared for as a resident. Josephine, born in London, had been a housewife, brought up her children and had involved herself in charity work. Mathilda had been born in Northern Ireland and, aged 25, came to work in London where she had trained beauty consultants.

All three suffered from painful and debilitating conditions. Their previous experience of music and current attitudes towards it varied. Neither Josephine nor Amelia listened to music very much although both thought it very important to them. Josephine was not able to provide much information regarding her musical preferences. Amelia was able to give general information

regarding genres and performers. Mathilda, on the other hand, listened to a wide variety of music regularly and gave quite specific requests as to the music she wanted on her programme.

Details of the three participants are now given including their response to the music intervention and its effect on them. Possible reasons for this are then discussed.

Amelia was the youngest of the participants in her care home. She had had a stroke two years previously and as a result had very poor mobility. She used a walking frame. She also suffered from diabetes and had poor eyesight. In addition, she experienced considerable amounts of lower back and leg pain due to arthritis. At the start of the seven-week period, she had a chest infection and during this period the pain was severe. During the first interview, she was initially reluctant to admit to pain; she did not like to complain. However, she finally selected level six (severe) on the IPT. During a later interview she confessed, 'I'm in so much pain'. It affected her sleep a great deal and she found the slightest activity exhausting. She therefore spent the majority of her time in her bedroom. She also admitted to a little depression at times. Although very unwell, Amelia often compared herself to others who were worse off and this made her feel rather better about herself. She tried to maintain a positive attitude, despite her incapacity. She would say, 'Life is what you make it.' Like so many of them, the weather affected her. The research was carried out from the end of October until December and she found that the damp and the cold made the pain and fatigue worse. Due to problems with concentration and sight, she was no longer able to read.

Some of the themes identified as representative of this sample, were applicable to Amelia: severe loss of autonomy, a deterioration of health and ability to take part in activities, loss of energy and loss of social contact. Baseline assessments of pain, anxiety and depression showed that she had strong levels of pain, moderate levels of anxiety and mild levels of depression. Carers gave a more upbeat assessment of her overall state, suggesting that her general health was good, that she had mild pain on occasion and no anxiety or depression. This would seem to be an underestimate but might be explained by Amelia's positive and uncomplaining attitude.

Amelia was allocated to Group One. Over the first three weeks, results showed that her levels of pain reduced very slightly, but her levels of both depression and anxiety increased: from six (severe pain) to five (strong); from 18 to 20 (anxiety); from 15 to 18 (depression). Other than the chest infection during this period, there were no other known factors that influenced the effect of the intervention. During the remaining three weeks, her pain levels remained the same, and her anxiety and depression scores decreased.

As far as music was concerned, Amelia had enjoyed some piano lessons in her childhood and had sung in the convent choir. She said that she listened every day, either to Classic FM or television. She did not possess a music player. When asked about her musical preferences, she was able to provide some ideas about genres, some performers and her favourite instruments. Music was very important to her and she thought that it would be of benefit.

Her response to the music was very positive. She had no problems with using the music player and talked of other models as being too complicated with so many buttons. She thought it 'a great invention'. She also liked the selection saying, 'I couldn't have picked better myself.' When asked about her response, she described the music as uplifting, soothing and relaxing. She described being able to 'get into another world'. She found it especially helpful when she wasn't feeling well. She was also able to identify particular pieces that she particularly enjoyed and shared the programme with the care staff who looked after her.

Like Amelia, Josephine had poor mobility and needed a walking frame to maintain some level of mobility. This was due to the deterioration caused by Parkinson's disease. The symptoms included stiffness of movement, poor balance, a weakened voice and difficulty in swallowing. She described the sensation in her feet 'as though they are stuck to the floor'. This was frustrating for her. Arthritis in her neck, shoulders and hands caused pain, and left her unable to write. Pain was constant, made worse by tiredness and the damp weather. Eating and drinking were slow.

She was resigned to life in the care home and took determined steps to make her life bearable. For example, she listened regularly to talking books, ate her meals in the dining room to maintain some level of social contact and continued to take an interest in her appearance. However, this did not always prevent boredom and loneliness. Her mood was not always good. Boredom, or a lack of visitors would depress her. She said, 'Some days I'm alright, and other days I feel fed up with myself.'

Several of the themes identified as representative of this sample were applicable to Josephine: loss of autonomy, social contact, energy and the fear of further deterioration from the ravages of Parkinson's disease. Although she was determined to maintain as much independence as possible, it was a constant struggle. Her arthritic hands not only prevented her from writing but also meant that getting dressed or manoeuvring the walking frame was painful. This was upsetting for her.

Josephine was assigned to Group One. Over the ensuing three weeks, results showed that her levels of pain decreased slightly from five (strong) to four (moderate); her levels of anxiety and depression both increased: anxiety from 16 to 18; depression, from 8 (none) to 13 (mild). During the remaining three weeks, pain increased, anxiety scores increased and depression scores reduced very slightly.

Josephine had a high level of interest in music having learnt the piano for seven years during childhood and sung in a school choir. She would listen to Classic FM on some days but less than she had in her own home. When asked about her musical preferences she was not very specific and found it hard to identify music other than the genres of musicals and opera. Despite that, she considered music as being very important to her and said 'if I couldn't hear it I'd be heartbroken.'

Josephine enjoyed the music programme and seemed to listen regularly in the evenings, although there were some days when she was away with her daughter and unable to listen. Most of her programme was enjoyed. However, some pieces were removed as she found them too serious; she

preferred the lighter pieces without too much emotion. She found that 'sentimental music makes me howl'. At the end of the three weeks she was very disappointed to stop the programme and talked about getting some of her old CDs from her home.

Mathilda, also quite young to be in a care home, had many physical problems. She suffered from Muscular System Atrophy (MSA), a degenerative condition affecting movement and balance. The symptoms she experienced were shaking hands, cold feet, slurred speech, weakness of the voice and difficulty in swallowing. In addition to this, she had arthritis in multiple locations. These conditions made her very incapacitated and she needed a wheelchair. There were few activities of daily living that she could carry out herself. Difficulty in swallowing and controlling hand movements meant that she had to be fed; her speech was hard to understand and conversation difficult; she avoided contact with other residents and stayed in her room. Unfortunately, many of the staff were not totally proficient in English and they found her very difficult to understand. This added to the difficulties she experienced.

Pain was a constant in her life. It could be excruciating but not for long periods. The scores that she gave therefore fluctuated from excruciating to very severe to mild, depending on the moment. This intensity of pain affected her sleep, appetite, mood and concentration. As she expressed it, 'I can't get comfortable, can't relax, concentrate, read or watch TV. I can't tolerate it, I want to scream.' Having liquidised food was not appetising and eating was an effort. An additional symptom of MSA is a poorly controlled emotional response; sometimes she would burst into tears and at others she could be uncharacteristically upbeat.

Clearly the loss of autonomy that Mathilda experienced was overwhelming. She was totally reliant on the staff for all her needs. She knew that her situation could only deteriorate further and this scared her; she had very little energy or social contact. Her voice had been badly affected by her illness and she was difficult to understand. This increased her isolation.

Mathilda was allocated to Group Two. During the three weeks of the music intervention, pain levels decreased from nine (excruciating) to six (severe); anxiety scores stayed constant at 35 (very high) although there was some fluctuation in the intervening weeks; depression scores increased from 21 (moderate) to 23 (moderate to severe). Throughout, her scores for each of the dependent variables were high.

As far as music was concerned, Mathilda, although she had no experience of playing music, was a regular listener. Radio 3, Classic FM and her own iPod collection were all part of her listening experience. When asked about her preferences, she specified a wide variety of performers, composers and instruments. She recognised music as being very important to her but didn't know if it would be of specific benefit.

She listened regularly, often at night when unable to sleep. Although she had requested particular pieces of music that were included in her programme, she changed her mind about some of them and asked for them to be removed. For example, one week she said that she would enjoy Bruch's violin concerto no. 1 in G minor, Op. 26; the following week, it was Vaughan Williams' 'The Lark Ascending'. The request for different music may have been due to a need for different music in different circumstances as suggested by Kemper and Danhauer (2005). She talked of putting on the music when the pain was bad but said it made no difference, the pain was too severe. Sad music made her cry.

Each of these responses, both individual and collective, are now reviewed further, as with the Groups A and B, to explore what factors prevented any change to their condition.

Both Amelia and Josephine had some background in music, both having learnt the piano and been in a choir. Mathilda had little background experience of music but was knowledgeable about it and a very regular listener. They therefore shared a positive attitude towards the programme. Amelia thought that the programme would benefit her but the others were less sure.

Their ability to make a clear selection of their preferred music varied. Amelia was able to choose her favourite genres and give a few more specific pointers but, other than two particular performers, had no other specific requests. For Josephine, it was similar. She could specify some musicals that she enjoyed but little else. Mathilda was very much more specific, both with genre, composer and specific works. However, despite this, she was not content with the programme, constantly asking for different things and nothing being quite right. For this group, therefore, the establishment of musical preference was less straight forward although Amelia was delighted with the choice, saying, 'I couldn't have picked better myself.' Josephine also appeared to enjoy the programme although some of the pieces had to be removed. It may be that for this group the music selection, because of the difficulties in establishing preference, was not so effective and did not tap into their emotional response in the same way.

As they all talked of listened regularly to music, the programme was not a new interest. However, both Amelia and Josephine were delighted with the music player, had no difficulties in using it, and were very sad when it was taken away. They both admitted to some loneliness and boredom and the music addressed that to a degree. Amelia spoke of music being company.

Amelia listened to the music for a considerable amount of time each day. Josephine was quite reliable in her listening but went to visit her daughter for two periods during the programme and therefore missed some sessions. Mathilda, on the other hand, varied in her listening patterns. When her condition was worse, she did not listen at all. This reduction in her listening time is another factor to be considered.

Although the pain scores for Amelia and Josephine were strong, they were no higher than for those in groups A and B. However, pain appeared to impact upon their lives to a greater degree than those in the first two groups. This may have been due to the positive attitude that they shared and their determination to be as independent as possible, perhaps underplaying the extent of their pain and providing lower scores than was actually the case. Amelia continually looked on the positive

side of life and rarely complained. She would comment on how much worse other people were than her. However, as already referred to, she did admit to being in severe pain. This was during the time of her chest infection and it almost seemed as though she had given up. She also had to cope with multiple antibiotic treatments which did not agree with her, and may have contributed to lower mood levels. Josephine, in her determination to remain as independent as possible, experienced a great deal of pain in her attempts at mobility. She did not want to admit to failure or to accept further assistance. This may have led to her not wanting to admit to as much pain as she was in fact experiencing. Nor did she want to be like some of the other residents who 'moan all the time'. Mathilda, on the other hand reported high levels of pain, usually nine or ten and described it as excruciating. It often seemed to be overwhelming. At its worst, she was unable to do anything except to cry. When in that state, she did not want to listen to music. On the occasions that she did, she found it had no effect, it failed to help her relax. As she said, 'The pain is too bad.' In addition, her fluctuating emotions made reliable assessment difficult. For each of these three participants, it may be that their pain was such that music could not provide either the distraction or the emotional involvement that could affect an improvement in their response to the music.

For this third group, therefore, some specific factors may have affected their ability to respond to the music. Although they each shared the enjoyment of listening to music, its selection was not straightforward, and this may have been one factor that contributed to the lack of response.

Amelia's participation in the music programme was reliable, but for both Josephine and Mathilda there were days when they did not listen. The opportunity for music to affect them was therefore slightly reduced. As already discussed, the severity of their pain may have been overwhelming. This may have limited the possibilities for music to act as a distraction and may also have dampened their capacity to experience the positive emotions that could have alleviated their feelings of anxiety and depression. As Bertirotti and Cobiainchi (2008) observe, the benefits of music are not certain for everyone.

6.5.5 Summary

The findings from the quantitative analysis suggest that the outcome of the music intervention was effective, with significant reductions in pain perception, depression and anxiety. This qualitative analysis supports those findings, and also sheds some light on a number of additional issues. It gives further indications of the challenges involved in research amongst the care home population, suggests some reasons for both the positive and neutral effects of the music, and raises a number of questions that could be explored in future research. These will be discussed in more detail in Chapter Seven.

7 Chapter Seven

7.1 Discussion

A discussion of the findings from both the quantitative and qualitative data is presented in this chapter with particular reference to the three research questions. An assessment is made of the various strengths and limitations of the study.

7.2 The research questions

7.2.1 What impact does regular listening to preferred music have on levels of pain, depression and anxiety in older people in long term care?

The evaluation of the effectiveness of the music intervention on levels of pain, depression and anxiety amongst older care home residents was made from the statistical analysis of the quantitative data. As presented in Chapter Five, the results of the analysis show that there were statistically significant decreases in levels of pain, depression and anxiety during the two three-week music intervention periods. There were no significant changes found during the control periods.

The first of the research questions therefore indicates that listening to preferred music does have a role to play in the alleviation of pain, depression and anxiety in older people within the care home population. The extent of the changes varied between the three dependent variables and between the two research periods. The findings are summarised and discussed below.

7.2.1.1 Pain

Wilcoxon tests were used to evaluate the impact of the music intervention on each dependent variable. During the first of the two, three-week research periods (Intervention One), the analysis of both pain assessment measures (VDS and IPT) of the experimental group showed a statistically significant decrease in pain: ($Z = 2.950$, $N\text{-ties} = 29$, $P = 0.003$) and ($Z = 2.428$, $N\text{-Ties} = 29$, $P = 0.015$), with effect sizes of $d = 0.3272$ and $d = 0.3098$ respectively. The control group, for the same period, showed no change in VDS scores and a very small non-significant decrease in IPT scores.

Results of the experimental group for the second of the three-week research periods (Intervention Two) were less conclusive. There were non-significant decreases shown for both the VDS and the IPT assessment measures: ($Z = 1.504$, $N\text{-Ties} = 12$, $P = 0.133$) and ($Z = .802$, $N\text{-Ties} = 15$, $P = 0.422$) respectively. The control group, for the same period, showed a very small non-significant reduction as measured by VDS, and a small non-significant increase as measured by IPT.

The results for the experimental group in Intervention One indicate that the music intervention had a significant effect on the perception of pain. As Figure 5.15 (p.181) demonstrates, there was a week on week decrease. Although there was a corresponding decrease in pain perception during Intervention Two, this did not reach significance. As Figure 5.16 (p.182) demonstrates, the decrease in pain was interrupted by a small increase in the reported scores between weeks five and six and this resulted in a reduced overall effect. As the data were collected at different times in each location, there was no identifiable event or situation that could account for this increase. Although the reduction in pain levels was greater than that shown in the control group, the effect size ($r = 0.1324$) demonstrates that the second period of intervention was less effective than the first in reducing pain levels.

The more detailed analysis of the effect of the music intervention on the different categories of pain showed that decreases in pain perception were only significant for those reporting middle ranges of pain in the mild to strong categories. This was the case in both intervention periods and indicates that the music was ineffective for the relief of severe or excruciating pain.

However, despite these limitations, the overall results indicate that the music intervention was effective in reducing the perception of pain in both groups to a greater or lesser degree.

7.2.1.2 Anxiety

During Intervention One, the analysis of anxiety levels demonstrated a statistically significant decrease in anxiety in the experimental group: ($Z = 4.448$, $N\text{-Ties} = 42$, $P = 0.000$) with an effect size of $d = 0.6669$. The control group, for the same period, showed no change.

During Intervention Two, there was also a statistically significant decrease found in the experimental group: ($Z = 3.724$, $N\text{-Ties} = 32$, $P = .000$) with an effect size of $d = 0.6527$. The control group, for the same period, showed a statistically significant increase in anxiety levels: ($Z = 2.559$, $N\text{-Ties} = 36$, $P = 0.01$).

These results indicate that the music was effective in achieving significant decreases in the anxiety levels of both Groups One and Two. As shown in Fig. 5:17 (p.182) during Intervention One, the experimental group showed a week-on-week decrease in scores. Scores for Group Two, (Fig. 5:18, p.183), remained quite static whilst in the control condition but as a result of the music intervention, they also showed a weekly decrease, except for a small increase during the last week. It is not possible to discern the cause of this due to the disparate timings of the data collection. However, despite the small increase, the overall decrease found over the three-week period was statistically significant in both experimental groups, with both groups showing similar effect sizes. These

findings therefore indicate that the music intervention was very effective for participants in both experimental groups, and suggests that the difference of response between the two groups as shown by the results for pain in the second intervention period was not due to any significant differences in the makeup of the sample. The lower results achieved for pain relief may therefore be attributable to other causes.

The significant increase in anxiety following the first intervention period indicates that anxiety was very sensitive to the effects of the music; when the music-listening period was over, the levels of anxiety began to increase to levels near to those assessed at baseline.

The more detailed analysis of the effect of the music on those with different levels of anxiety showed that the intervention had significant benefits on both those with high baseline levels of anxiety as well as those with low levels of baseline anxiety. Irrespective of whether they were high or low, there were significant decreases in anxiety itself, and also in levels of depression and pain. However, the improvements to pain were greater for those with lower levels of anxiety.

There is therefore some indication that those with severe pain and those with high anxiety show little improvement to pain as a result of the music intervention. This is supported by the qualitative findings which found that the three participants who showed little response to the music intervention were in extreme pain and in greater emotional turbulence.

The analysis of individual items within the anxiety assessment scale showed that there were greater improvements for some items of the anxiety scale than others. During Intervention One, Group One (experimental) showed significant decreases in seven of the eleven items: feelings of nervousness, irritability, anxiety and worry all reduced, whilst feelings of relaxation, satisfaction and looking forward all increased. The remaining four items also showed decreases, but these did not reach significance. These findings were not replicated in the control group; there were no significant

findings for any of the individual items during this period. During Intervention Two, findings from Group Two (experimental) showed significant decreases in five of the eleven items: feelings of relaxation, satisfaction and energy increased, whilst feelings of irritability and anxiety decreased.

The items for which music demonstrated the most widely experienced effect throughout the research period were therefore relaxation, satisfaction, irritability and anxiety. Relaxation is one effect of a music intervention that has been identified by a number of researchers. Greasley and Lamont (2006), MacDonald (2000) Gold and Clare (2013) and others have all found evidence for this. In addition to the findings from the analysis of the quantitative data, this was also confirmed through the qualitative analysis. Participants referred to times when they were on edge, uptight or tense, unwell, frustrated, depressed, nervous or worried as conditions responsive to music's relaxing effect.

One component of the scale for which there were no significant findings, in either intervention periods, was 'calmness'. With its closeness in meaning to 'relaxation' a similar response might have been expected. However, its meaning was not so obvious to a number of the participants and appeared to be more difficult for them to assess. Consideration might be given to its inclusion in future research.

Given the widespread incidence of anxiety amongst older people within the care home environment, these significant results are to be welcomed. It is hoped that if experienced over a longer time span, these improvements in feelings of relaxation and mood could reverse some of the effects of anxiety referred to in the literature review and lead to an improvement in all round health.

Possible reasons for the greater benefit to anxiety than to pain are discussed in 7.2.1.4.

7.2.1.3 Depression

The results for the analysis of depression levels showed a similar trend to those of anxiety. During Intervention One, the experimental group showed a statistically significant decrease in depression: ($Z = 3.484$, $N\text{-Ties} = 38$, $P = 0.000$) with an effect size of $d = 0.623$. Over the same period, the control group showed a small non-significant decrease.

During Intervention Two, there was also a statistically significant decrease in the experimental group: ($Z = 3.917$, $N\text{-Ties} = 32$, $P = 0.000$) with an effect size of $d = 0.7364$, whilst the control group also showed a small non-significant increase.

These findings indicate that the effect of the music intervention on levels of depression was similar to that on anxiety with both groups benefiting equally with similar levels of significance and effect size. Figures 5.19 and 5.20 (pages 184, 185) show the gradual week by week decrease that occurred. This pattern, also observed to a lesser extent in the findings for pain and anxiety (applicable to one group only), suggests that the music intervention may have resulted in an accumulative effect. This was also observed in a review of the effects of listening to music on depression carried out by Chan et al. (2011). It indicates that if the music intervention were to continue for a longer period of time, more benefits might accrue.

The same process of analysis was carried out on the individual items of the assessment scale and, this, like the analysis of items of the anxiety scale, also showed that some items were more affected by the music than others. During Intervention One, there were significant benefits to three of the eight items of the depression scale. Participants in Group One (experimental) were less bothered by little things, less tired and had better concentration. They also had fewer depressive feelings (this finding was close to reaching significance with a P value of 0.058). Only the item relating to appetite showed no change. Although changes in appetite are common symptoms of depression, participants found this difficult to assess. Each day revolved around mealtimes and food, as

discussed in Chapter Six (p. 223) was a frequent subject of conversation. However, the majority were unable to identify any changes to their appetite. However, there were several participants who reported weight gain. This may indicate that their appetites had indeed changed. During Intervention Two, participants in the experimental group slept better, were more cheerful and less tired. The remaining items all showed improvements, although without achieving significance. The most widely experienced effect was shown in levels of fatigue.

These findings suggest that the effect of music on depression levels was of real benefit to the participants. Depression, as discussed in the literature review, affects not only mood, but cognitive and functional ability. If listening to music were experienced over a longer period of time, it is hoped that there would be notable improvements in overall health.

The individual analysis of each item in both the anxiety and depression scales was helpful in identifying the areas most affected by the music intervention. It also was helpful in identifying items that were less easily assessed. For example, the use of 'calmness' might be reconsidered, whilst alternative ways of assessing changes in appetite, such as staff observation, might be necessary.

In summary, these results show that the benefits of the music intervention to all three dependent variables were significant. The random allocation of participants into experimental and control conditions gives some confidence that the results can be attributed to the effects of the music intervention, rather than to any of the other variables. However, some questions remain. As already discussed, there is no obvious explanation for the inequality of results for pain between the two groups. More importantly, the lesser effect of music on pain in both of the groups raises a number of questions. Possible reasons for this are now discussed.

7.2.1.4 The variation of effect between the three variables

The findings for the decreases in anxiety and depression levels compare well. Levels of significance and effect size were similar, the decreases were accumulative and the results were equally applicable to both groups. Given these similarities, the lesser effects found for any decrease in pain levels are surprising. It is suggested that, rather than being a methodological issue, there might be other explanations for the findings.

It had been anticipated that results for each of the dependent variables would be similar. As noted in the literature review, the three conditions are highly correlated and this was found to be the case in the baseline analysis of depression and anxiety (p.161). There was a positive correlation ($r = .601$, $n = 102$, $P = .000$) for anxiety and depression levels, and, although not reaching statistical significance, pain levels were at their highest in those with the highest levels of anxiety and depression. In the same way that the three conditions are risk factors for the onset of each other (Karp and Reynolds, 2009), it would be expected that if improvement were to be found in one condition, there would be corresponding improvements in the others. Indeed, this is suggested by Melzack and Wall (1996). They believe that changes in pain intensity may directly change levels of depression and vice versa. Similarly, Voss et al. (2004) state that 'if patient anxiety and distress is reduced, then pain is also reduced'.

As already discussed, there were significant increases in feelings of relaxation as a result of the intervention. A corresponding decrease in pain would be expected. This is strongly referenced in the literature review where relaxation is cited as being one of the conditions that will 'close the gate' of the spinal cord; Mitchell (2003), MacDonald (2006) and Gold and Clare (2013) all refer to relaxation as being an important factor for the relief of pain, and Finlay and Rogers (2014) state, 'Distraction and relaxation are regularly recommended as part of a pain management toolkit.'

The two theories on which this study is based⁴⁰, both regard emotional arousal as being the catalyst for effecting change. It is expected that music, in its ability to evoke intensely emotional experiences, is able to benefit all three conditions. As discussed in the literature review, past research studies have shown broadly positive findings for music's benefits to each condition, although results have often been inconclusive when subjected to rigorous review. Reasons for the less positive examples are generally attributed to failings of methodology or of music delivery, rather than to any lack of effectiveness of the music itself (Evans, 2002a). In this study, given that the procedure was the same for each condition and assessed at the same time, the variation in effect suggests either that different protocols may be necessary for pain as compared to mood (such as a longer period for the intervention), or that the heterogeneity of the pain perception (such as its severity, its location, the type of pain, or the underlying seriousness of the condition) may affect the outcome. It may also suggest that music is of less benefit to pain than to mood. However, this latter suggestion would contradict previous findings. For example, Loewy and Spintge (2011) suggest that the immediate influence of music's effect may be most readily recognised in pain management.

With the exception of the study previously referred to by Siedliecki and Good (2006), to my knowledge there have been no experimental studies that have investigated music's effect on both pain and mood concurrently and with an equal importance applied to both conditions. Results showed that both pain and depression were significantly affected by the music intervention with neither showing a greater effect than the other. It differed from this study in that its sample was drawn from those under 65, all of whom suffered from chronic, non-malignant pain.

There are two further studies, whose principal focus was the effect of music on pain, but which also explored levels of anxiety or depression as a secondary measure of effect. MacDonald et al. (2003) investigated the effect of music on pain following surgery (p.71); the first was following minor foot

⁴⁰ The gate control theory by Melzack and Wall (1965); the broaden-and-build theory of positive emotions by Fredrickson (2004)

surgery, the second was following hysterectomy surgery. Neither study showed any significant reductions in pain perception. In the first, the perception of pain was low; in the second, it was severe. It was concluded that in the first study the levels of pain were too low for any differences to be detected, and that in the second they were too intense. Finlay (2014) suggests that when the pain is severe, the musical distractor is insufficient for 'attentional engagement' when placed in opposition to pain signals.

These studies demonstrate the different results that can be found when there are different types and levels of pain. If an effect is not possible to detect when pain levels are low, or if there is no effect when the pain levels are very high, this will result in less observable benefits to a group consisting of individuals with a wide range of pain levels. It is probable that participants with pain levels between those extremes will show a greater response to the benefits of a music intervention. The findings from this study support that view. The analysis found significant decreases in pain for those with mild to moderate pain levels; however, for those with little pain or severe pain, the decreases were not significant.

The majority of researchers have focused on investigating music's effect on either pain or mood. For example, Guétin et al. (2009) carried out a study that explored the use of music on anxiety and depression. Two years later, Guétin, together with some of the original team of researchers, carried out a further study, but this time investigated the use of music in the management of chronic pain (2011). Hanser and Thompson (1994) focused on depression, as did Castillo-Pérez et al. (2010). There are many other examples. In each of these studies, the recruitment of participants was dependent on the condition being assessed. For example, in Schorr's (1993) study, previously mentioned, all the participants suffered from rheumatoid arthritis; the criteria for taking part in the study of chronic pain by McCaffery and Freeman (2003) was a diagnosis of osteoarthritis; in the study of pain by Guétin et al. (2011) it was at least six months history of pain; in a study of depression by Castillo-Pérez et al. (2010) all participants suffered from some degree of depression;

in the study of anxiety and depression by Guétin et al. (2009) all participants suffered from diagnosed anxiety, depression and mild dementia. This latter study imposed further restraints on recruitment. Participants needed to have adequate verbal or written expression, adequate sight and hearing (no hearing aids were allowed) and sufferers of other neurological conditions such as Parkinson's disease were excluded. These restraints minimised the potential negative effects from other variables (although the sample of 30 was necessarily small). My study is unusual in that participants were not selected on the basis of a particular condition, but on the basis of their level of function and consequent need for the assistance supplied in a care home. This approach resulted in a sample that did not have a 100% experience of the dependent variables being assessed, in this case of pain, depression or anxiety. For example, with only 62% of the sample acknowledging pain, there was a smaller percentage of participants in whom there could be an observable result. This needs to be taken into consideration when assessing the extent of the intervention's benefit. In the case of the psychological variables, although there were some cases of low scores, all participants reported some level of depression or anxiety, thereby ensuring a much greater number of those in whom there might be a discernible effect.

Some authors have suggested that music does not benefit all conditions equally. For example, both Hanser (1985) and Biley (2004) suggest that results from studies investigating psychological variables show greater consistency than those investigating pain, whilst Standley (2000) suggests that depression is less responsive to music than other variables. As already referred to, Loewy and Spintge (2011) suggest that the music's effect may be most readily recognised in pain management. There is no consistency of opinion. One possible reason for this difference may be due to the limitations of assessment. Symptoms of pain and depression may fluctuate; pain, for example, may be worse at different times of the day, or when carrying out particular activities. The assessment of pain may therefore vary, depending on the time of day, or the activity being undertaken. These limitations may be possible to overcome in a study that focuses wholly on one variable such as pain. For instance, in one of the earliest studies in this field (Schorr, 1993),

participants were exposed to music at times of peak pain, thus ensuring that the music was available when it was most needed and when there was the greatest likelihood of an effect.

There are other possible explanations for the variation in effect. One possibility is that the requisite period needed for music to affect pain is greater than that required for mood change and should therefore be extended. The findings from this study showed that two weeks was a sufficient period of time for a significant reduction of depression and anxiety levels, but that the full three-week period was necessary for a reduction to be observed in pain levels. This is discussed in more detail in 7.3.1 under Additional Findings. Other researchers have come to different conclusions on the length of time required. For example, a one-off music intervention of only one hour was sufficient to show a significant result in Siedliecki and Good's (2006) study. However, Schorr (1993) observed that an intervention of this sort 'is likely not sufficient to engender a transformation'.

The reluctance of some participants to acknowledge or talk about pain was, in part due to their fear that by focusing on pain, they would become more aware of it. One participant, who only admitted to arthritis during the last week of the intervention said, 'It wasn't bothering me until you mentioned it.' This attitude was reflected in the paucity of qualitative data on attitudes to pain or any benefits received from it during the intervention. Such data as there were indicated that there was little expectation that music would help to reduce pain perception and in some cases considerable scepticism.

Participants' attitudes to questions relating to mood differed in that there was no corresponding reluctance to talk about how they felt. The weekly focus on anxiety and depression did not appear to make them unduly aware of the negative aspects of their situations. This may have been due to broad levels of acceptance that music might help them feel better. There was also some understanding that particular music, known and special to them in some way, was especially effective. As quoted in Chapter Six (p.251), some comments that expressed this view were: 'The

ones I really like make me relax' and, 'We all need our lollipops to soothe us. The idea that you know what is coming next.' Many also identified particular composers as being helpful to them. Music was frequently referred to as being 'relaxing' and 'soothing'; these were the benefits looked for and expected, rather than pain relief.

It could also be argued that the lesser effect was due to inconsistencies of self-report or to unreliable assessment measures. However, the use of self-report to assess pain is, as discussed in Chapter Four (page 82), widely accepted as being reliable and valid. As McCaffery (1979) observed, 'Pain is whatever the experiencing person says it is and exists whenever they says it does,' Of course, within any population, there may be some inaccuracies of self-report and it has been recognised that this may be especially true amongst older people (Gagliese and Melzack, 1997). However, the pilot studies demonstrated that the participants showed a good understanding of their use, and, although care staff under-estimated pain levels, this was as expected from the findings of the literature review. There was therefore no reason to believe that the self-report data was unreliable.

As far as the assessment measures were concerned, the use of two different scales, the VDS and IPT, allowed for inter-correlation and checks for reliability. As presented in Chapter Five on page 157, there was a very strong correlation between the two measures. Although the scores between the two differed slightly, they both showed the same trends and there was no evidence to suggest any conflict in the findings. Both scales have been used in previous research and have been found to be valid. As discussed in Chapter Four (page 89), the IPT has been judged by Herr et al. (2001) as the best choice for assessing pain intensity, whilst the VDS forms a section of the McGill Pain Questionnaire, the most commonly used assessor of pain. Participants in the study, although sometimes reluctant to admit or to talk about pain, found no difficulties with understanding or using the two scales, although some preferred one form, and some another. This does not seem to be a sufficient explanation for the results.

Any or all of these suggestions may provide some explanation for the variation in effect of the music intervention. There is already evidence from the findings that those with severe pain show little or no benefit; the level of pain may therefore be a contributing factor. The lack of expectation may also be part of the reason. To investigate this further, it would be of benefit to recruit a sample with a higher incidence of pain so that music's effects could be better assessed. An assessment of the relative benefits of music on pain and mood would also be of particular interest following on from the findings from this study. Despite the difference in results, the findings on the lowered perception of pain should be considered as further evidence and support for the use of music in pain relief.

7.2.1.5 Summary of findings for research question one

These findings confirm that pain, depression and anxiety are conditions that can be alleviated through listening to preferred music. Perhaps more importantly, they confirm that the frailest members of the oldest old population are able to benefit.

This is a welcome finding in this field of research and particularly so for its implications for the oldest old. As discussed in Chapter Two of the literature review, each of the three conditions has particular relevance to this population. Older people may experience more sensitivity to pain; their pain threshold and tolerance to treatment may decrease. Depression rises steeply in those over the age of 80 (Tannock and Katona 1995) and is often chronic at this stage of life (Manela, et al. 1996). Anxiety is increasingly being regarded as having as great an impact on older people as depression (de Beurs et al. 1999). Triggers for its onset are an inevitable part of many older people's lives: fear of worsening pain, disability, hearing and sight loss (Karp and Reynolds (2009). Additional causes are suggested in 7.3.6 through a further analysis of the findings.

The suggestion that the benefits of music accumulate over time is of particular interest and gives support to Fredrickson's (2004) theory that the effect of positive emotions is cumulative, leading to an 'undoing' of negative emotions. This is encouraging given the difficulty, suggested by Pinquart (2001), that positive emotions are less easily cultivated in old age. The improvements, for example, in feelings of relaxation and satisfaction with life, as well as less irritability and anxiety show that, despite the limitations imposed on the care home population through functional decline, improvements in wellbeing are possible. This confirms the assertion of Saarikallio (2010), that there is no weakening of emotion regulation abilities at this stage of life. As recommended by Chan et al. (2011), this cumulative effect could be further investigated through the use of a longer time period for a music intervention.

The results are encouraging in that they provide further evidence for the effectiveness of listening to preferred music. They suggest that music has a role to play in improving the wellbeing of those whose lives are characterised by poor health and functional decline.

7.2.2 To what extent do the positive effects of music continue after the period of the music intervention?

For the second of the research questions, as to whether the effect of the music was maintained after the end of the music intervention period, the outcome was less clear. As the results above demonstrate, the decrease in levels of pain, depression and anxiety during Intervention One, did not continue; rather than an ongoing decrease there was, instead, an increase. With the exception of the VDS measure, which showed a small non-significant reduction, there was a small non-significant increase in pain as measured by IPT, a statistically significant increase of anxiety and a non-significant increase in depression.

Although these findings could be interpreted as suggesting that the duration of music's effect was short term and that there was no maintenance of benefit beyond the music intervention period, this would ignore the fact that, although the levels of each dependent variable increased post-intervention, they did not return to their original baseline levels. Mean scores at baseline, at the end of the music intervention and at the completion of the research study, as illustrated below in Figure 7:1, (taken from Chapter Five, Figure 5:14), show that the increase in depression and pain following the end of the music listening period was small; the increase of anxiety was greater, but not sufficient to return to the original baseline levels.

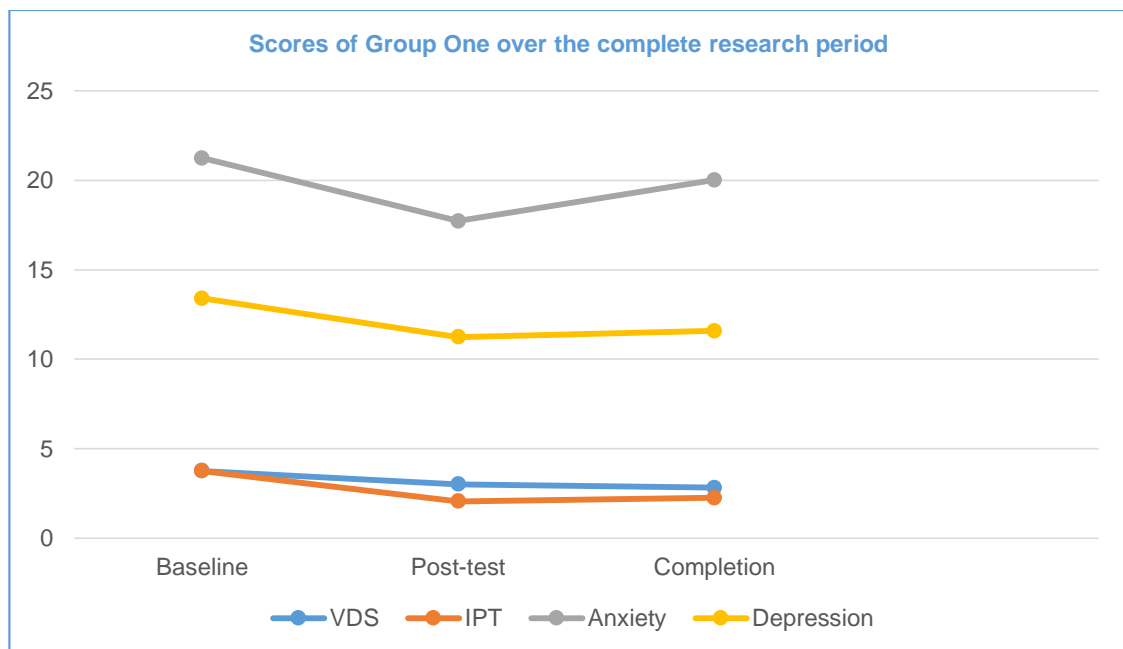


FIGURE 7:1 SCORES OF GROUP ONE OVER THE WHOLE RESEARCH PERIOD, COPIED FROM FIG. 5:14

These findings therefore suggest that the levels of pain, depression and anxiety were at lower levels throughout the second research period than would have been expected if there had been no music intervention at all.

An analysis of the individual items of the anxiety scale showed that, following the music

intervention, four of the 11 items on the scale returned close to their baseline scores, whilst others, although showing the same trend, did not. The four items were feelings of relaxation, which increased significantly, and feelings of nervousness, irritability and worry, which all decreased significantly. They are shown in Figure 7.2 below.

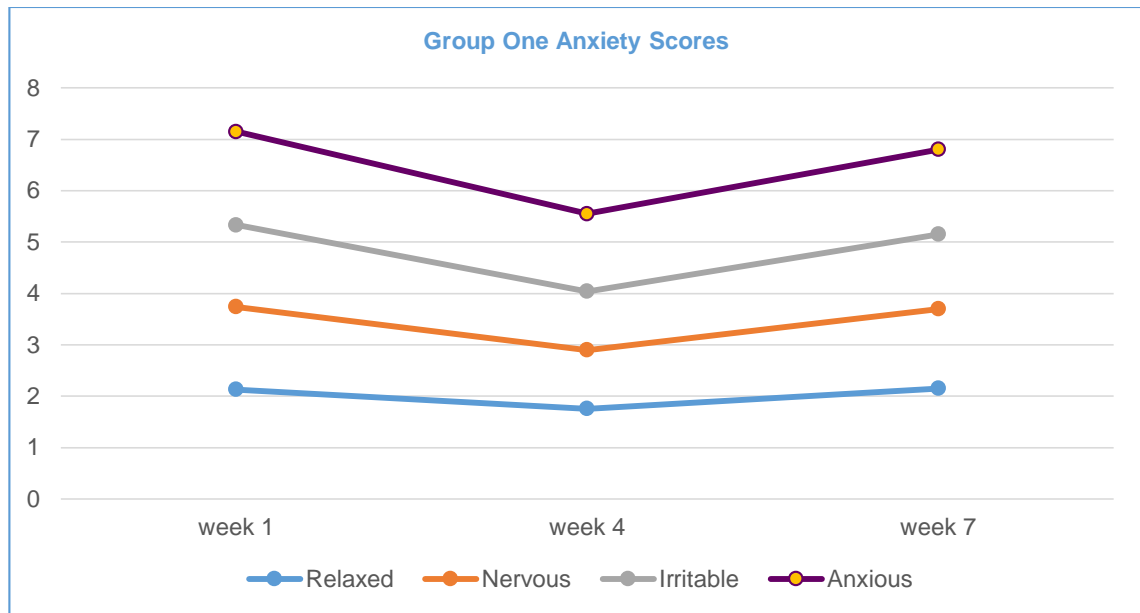


FIGURE 7:2 GROUP ONE ANXIETY SCORES OVER THE COMPLETE RESEARCH PERIOD

A comparable analysis of the individual items of the depression scale showed that there were no significant effects following the first intervention period. Although those items that showed significant improvements as a result of the music intervention showed a return towards the original values, these changes were small and are shown as a comparison in Figure 7:3 below:

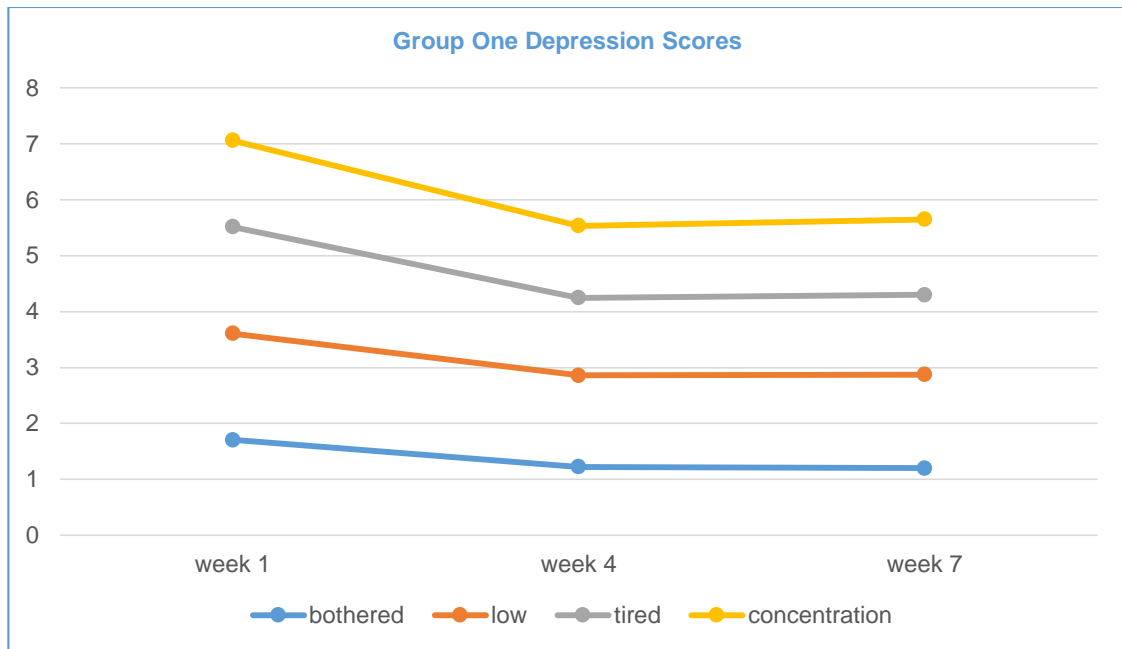


FIGURE 7:3 GROUP ONE DEPRESSION SCORES OVER THE COMPLETE RESEARCH PERIOD

These more detailed analyses of the anxiety and depression scales confirm the findings as shown in Fig: 7.1 and suggest that the effect on depression lasted for longer than that of anxiety, but that there was a greater initial effect on anxiety.

On a smaller time scale, the findings also suggest that the benefits of the music remained beyond the daily listening period. The weekly assessments were carried out when convenient, not during or just after a music-listening session. Without some ongoing benefits received from the daily music programme, the significant decrease in the scores would not have occurred. This residual effect of music on pain was identified by Schorr (1993), already referred to, who found that listening to music for 20 minutes was effective in reducing the perception of pain both during the listening period and for a period of time following, thus suggesting both an immediate and short-term enduring effect. This confirms Fredrickson's (2004) theory that the effects of positive emotions can endure beyond the short-lived emotional states that led to their original acquisition. This has been confirmed in a

number of other studies previously referred to, including those of McCaffery and Freeman (2006) and Guétin et al. (2009). To a lesser extent the findings suggest that there is some small residual effect that persists over a longer time frame. However, this is very small. Rather than any reliance on residual effects, the findings indicate that a regular pattern of music listening would contribute to more reliable ongoing benefits.

7.2.3 What are the factors that determine the range of individual response to a music intervention?

We live in a world where access to every conceivable type of music is a finger tap away, with our favourite music loaded onto our personal devices and available at any time of the day or night. Music, for most people, accompanies every aspect of their lives. However, despite this general appeal, music appears to affect some people more than others; levels of emotional response differ. This implies that when used as a therapeutic tool, not everyone will receive the same level of benefit. This was apparent during the course of this study; some appeared to derive great benefit, whilst others remained apparently untouched.

It is important to try and identify some of the factors that lead to a greater response to music. This would help those responsible for introducing therapeutic music programmes to be able to distinguish those who would be particularly responsive and who would gain the most benefit.

Ter Bogt et al. (2011), referred to on page 63, observe that those who regard music as being of particular importance to them are more likely to benefit in specific ways. This was also identified by Mitchell et al. (2007) as being a likely guarantor of positive effects. They found a correlation between those for whom music was important and those who listened to music to facilitate pain relief. They also found that frequent listeners (presumably those who considered music as important) were less likely to be depressed.

It was expected that the analysis of the qualitative data would best determine the factors that facilitate a greater therapeutic benefit from listening to music. However, the additional findings from the quantitative analysis (7.3 below) also provide some indicators as to what factors have particular importance. These include a confirmation of the findings of Ter Bogt et al. (2011) and Mitchell et al. (2007) referred to above. In addition to the consideration of music's importance and frequency of listening, those able to give a clear assessment of their musical preferences appear to benefit to a greater extent. There were significant differences of effect found for each of these variables and they are discussed in greater detail in 7.3.2 and 7.3.5 and 7.3.6.5. It is probable that these three factors will generally be present in one person and suggest that some previous engagement with music is helpful for a greater benefit. This is supported by the findings of a qualitative study by Gold and Clare (2013: 547) who suggest that the response to music is determined not only by the choice of music but by 'the personal and cultural background of the individual listener'.

The analysis also suggests that neither age nor gender are limiting factors to the successful application of music. There have been some who have queried the ability of those in extreme old age to benefit from music. For example, Chamorro-Premuzic et al. (2012) suggested that increasing age was associated with a decline in the appreciation of music. However, the findings from this study refute this view. It is suggested that music is able provide therapeutic benefits to the end of life. These findings are discussed in more detail in 7.3.3.

Gender was not an issue when assessment was made for music's effect; equal benefits were found for both males and females. Although females showed significantly higher levels of anxiety as measured at baseline, a similar range of effect was found for both males and females. This therefore suggests that neither gender is more likely to accrue a benefit from listening to music than another.

It was also found that the choice of genre had no bearing on the range of effect experienced (7.3.4). Although there were marginally greater benefits found for those who chose classical music, it is suggested that this was due to difficulties of programme selection, rather than choice of genre. This is in line with previous findings. As referred to on page 61, Nilsson (2008) suggests that the choice of genre has no influence on the effectiveness of an intervention.

So age is no barrier, gender is no barrier and choice of music is no barrier.

As described in Chapter Six, qualitative data were used to assess the response to the music of a small number of participants. Although a number of factors were identified as being of possible importance in determining a beneficial response, there was little consistency in the findings. They did, however, confirm the findings of the quantitative analysis. The situations of each group are summarised and the findings are discussed below.

The ages of the nine participants studied in more detail ranged from 70 to 96. There were four in their 70s, three in their 80s and two in their 90s. Those in the group showing the greatest benefit were aged 70, 76 and 96, thus representing both the lower and higher ages of the sample. This confirms the notion that age is no barrier to enjoying and benefiting from music; indeed, for these three participants, it was one of the few things that they could enjoy. They were all deeply frustrated by their health and its effect on their lives. None of them found their current situations easy; there were no positives, only negatives. Besides experiencing pain, they each spoke of worry, anxiety, depression and boredom.

As well as sharing some of the negative experiences of old age, they also shared some similar attitudes regarding music. They were each able to give some indication of their musical preferences. This resulted in programmes that they enjoyed, thereby ensuring good adherence to the 30-minute listening period required. It is likely that they listened for longer periods, although that

was not possible to determine. They all had some background engagement with music in their past and some current appreciation of it. However, only one of them considered music to be very important, the others described it as being 'quite important'.

Although two of them were not able to be specific about their preferences, they were able to identify areas of interest that could be integrated into the programmes. For example, one had a son who sang in a cathedral choir. His programme contained choral music that, apart from anything else, reminded him of past occasions that he had attended to hear him sing. Another's past interests were dancing and going to church. Her programme included music that she might have danced to, hymns that she might have sung as well as songs from the war years that she would have known. It seems that this link with their pasts contributed to the enjoyment that they experienced. For the third, the process of discussing his likes and dislikes generated a growing interest in his participation in the study.

There are therefore a small number of factors that would appear to be of significance when determining who the most likely beneficiaries of a music intervention will be. Firstly, the fact that these three participants all had some previous experience of music, whether through playing or listening, is likely to be an important factor for generating a good response. It ensured that they had a history of musical experiences to draw upon when thinking of their preferences. Secondly, the successful interpretation of their preferences into programmes, not only of music that they enjoyed, but also of music that evoked memories of the past, ensured greater levels of interest and emotional involvement as well as frequent listening. A further factor is the level of importance attached to music, as previously discussed. The fact that only one of this group rated music as being very important was somewhat surprising. However, one of those who rated it as being 'quite important' demonstrated a wide knowledge of music and a level of interest in the study that suggested otherwise.

The genres chosen by the three ranged from classical to light classical, to popular, to rock and roll. As they all benefited from the intervention, this lends further support to both the findings from the quantitative data (7.2.4) and of the literature that a positive outcome is not dependent on the choice of genre.

The factors identified through the analysis of the quantitative data correspond well with the findings from these three participants: a clear identification of music preference, frequent listening to music and the importance of music. Although the latter was not so clearly identified, it would appear to be a factor that should be considered. There is also the additional factor of having some previous experience of music.

Other factors that were identified as being of importance in generating a good response from this first group of participants were the use of preferred music (and therefore of any genre) and music that had personal references. These were identified as being a catalyst for a greater emotional response. The ability to control the choice of the music and the operation of the music player also contributed to some small increase in autonomy. As one participant said, 'to be able to choose and play my own collection was wonderful, the music has helped the boredom'.

The three participants who benefited to a lesser extent from the music intervention were in many ways similar to the first three. They also complained of frustration and for similar reasons: poor health, boredom, lack of autonomy, fear of the future and pain. These were the hallmarks of their lives.

They also shared some similar attitudes to music. Although none was a regular listener to music, they had all engaged with music at some level in their past and all of them thought that music was either important or very important. Two of them were able to give quite clear preferences, one of them detailing the music that he did not want, as much as the music that he did. The third, who

suffered from confusion, was more limited in the information that she could give and was unable to recall how often she listened to the music. In each case, the programme provided was regarded by them as successful in that it was a good expression of their preferences. Two of them were not able to operate the music player independently and so were reliant on others to do it for them.

Some of the identified factors for a good response were present in these three participants. They had some previous experience of music, preference was catered for and music was important to them (more so than in the first group). It may be that the frequency of listening was a little less, but there were signs of interest in the study and less boredom as a result. For one of them, the control of the choice of music and over the music player was helpful.

It is therefore difficult to account for the difference of results between these groups as shown by the quantitative data. Personal circumstances may have been a cause. One had serious family problems to cope with, whilst another was facing death. Both of these situations were demanding of their emotional resources and perhaps, in the same way that very severe pain may be beyond music's reach, severe emotional distress may be as well.

The final three participants showed no benefits from the music intervention. They too suffered from debilitating conditions. However, pain for each of them was more severe and their lives were even more restricted with limited opportunities for any social contact. Boredom was high and levels of autonomy extremely low.

However, music was important for all of them, with two of them listening regularly and one sporadically. This was more than in either of the other two groups. They all had some experience of music in the past. Two of them were able to give some limited information about their preferences and the third was able to be very specific. These factors would suggest that their response to the

music would be very good. There was the additional advantage that they were all able to operate the music players.

However, their reaction to the music selections made for them varied. For one, it led to great enjoyment and frequent listening. This again would point to a positive response. Another enjoyed the selection in part; she disliked anything that was sad. Some of her programme was adapted, although this was not immediate. The third, who was the most specific of them all when talking of her preferences, was also the least content. For one reason or another, the music was never right. Mood swings were a symptom of her condition and perhaps the music did not meet her needs when 'down' or 'up'.

As well as the more limited success of the programmes, adherence also varied. One participant was not able to listen when in extreme pain; it was too overwhelming. Another was away for several days. These two factors alone would be sufficient reason to explain the lack of results. However, for one participant, this was not the case. She loved the music and listened regularly.

The one issue that united the three participants was the severity of their pain. It overwhelmed them and compromised their ability to respond. They also had to cope with the side effects of analgesic drugs and in one case, repeated courses of strong antibiotics. This supports the findings of the study referred to in Chapter Three (p. 72), which suggest that music may not be a sufficiently strong distractor for the relief of pain (Finlay, 2014).

These findings suggest that although there are certain factors that appear to be important for the benefits of music to be fully realised, these are not always enough. Severe pain or severe emotional trauma may limit or prevent music's effects. This is not something that can be pre-determined and therefore it is probable that in any comparable music intervention, there will be those that fail to respond for one of these reasons.

For the majority of individuals, the overall findings suggest music can be of benefit irrespective of age, gender or cognitive function. Potential benefits are realised more effectively if there is some previous experience of music, if music is regarded as important and if it is listened to frequently. Benefits can be further enhanced if the music accords with preference, if it has some personal resonance and facilitates an emotional response and if there is some control over the time and content of the music programme.

These are all factors that have been identified through previous research and have been discussed in Chapter Three of the literature review. Nothing was found that was either specific to older people or that has not been previously identified. However, the findings confirm the importance of ensuring that these various elements are in place. They also suggest that a positive response cannot be guaranteed.

7.3 Additional Findings

Further to the results directly related to the three research questions, there were a number of additional findings. These related to the effects of other variables as presented in Chapter Five as well as issues of methodology. These are discussed below.

7.3.1 The duration of the music listening programme

The variation in the length of music delivery programmes has been cited as one of the issues that challenge the careful assessment of music's benefits. The three-week period for a music intervention was the time frame recommended by Maratos et al., (2008), Nilsson (2008) and Cooke et al. (2010) as being a sufficient period of time for significant differences to be observed.

As the findings above show, the choice of a three-week period was sufficient for significant decreases to be detected. However, as the assessments were carried out on a weekly basis, it was possible to investigate whether a shorter time frame of two weeks could be used to similar effect.

In addition to the analysis of pre- and post-test scores taken at baseline and after the three-week intervention, the same analysis was therefore carried out between baseline and after two weeks of the three-week intervention, again using Wilcoxon tests. The analysis of pain levels of the experimental Group One showed that both the VDS and the IPT ratings showed a strong reduction in pain perception, but these did not reach significance. IPT scores: ($Z = 1.098$, $N\text{-Ties} = 29$, $P = 0.272$) and VDS scores: ($Z = .965$, $N\text{-Ties} = 26$, $P = 0.075$). The original analysis of the second research period did not find a significant reduction for pain perception and, as expected, an analysis of the shorter two-week period showed only a small reduction in pain perception. These findings therefore suggest that the three-week time frame is the minimum required for a significant decrease in pain to be detected. As discussed in 7.2.1.4, this is an area for further research.

The same analysis was carried out on anxiety levels. Pre and post-test scores of the experimental Group One, taken at baseline and after two weeks of the intervention showed that a statistically significant reduction occurred between weeks one and three: ($Z = 3.567$, $N\text{-Ties} = 40$, $P = 0.000$). This was also the case during the second research period; the experimental Group Two showed a statistically significant reduction between weeks four and six: ($Z = 3.939$, $N\text{-Ties} = 33$, $P = 0.000$). These findings suggest that the shorter time frame of two weeks was sufficient for music to have a significant effect on anxiety levels. However, it should be noted that during the second research period there was a slight increase of scores in the final week. It was not possible to discern any reason for this, but indicates that some fluctuation of scores can occur at any time. To allow for this, a three-week time frame may be the more appropriate period.

Similar results were found for weekly changes in depression levels. Pre and post-test scores of the experimental Group One, taken at baseline and after two weeks of the intervention showed that a

statistically significant reductions occurred between weeks one and three: ($Z = 2.802$, $N\text{-Ties} = 37$, $P = 0.005$). This was also the case during the second research period: the experimental Group Two showed a statistically significant reduction between weeks four and six: ($Z = 3.258$, $N\text{-Ties} = 30$, $P = 0.001$). As with anxiety, these findings suggest that the shorter time frame of two weeks was sufficient for music to significantly reduce depression levels.

The precise daily dosage was not investigated. Participants were asked to listen for a minimum of 30 minutes each day. Some listened for longer and it may well have been that some listened for less. This was not information that was possible to record with any accuracy.

As quoted in Chapter Three of the literature review (page 63), Garza-Villareal (2013) stated that 'the precise dosage [of music] needed, the time it needs and the duration of effects are still unknown'. Although these findings do not contribute to what might be the best daily dosage, they build on past research relating to the overall length of intervention and the duration of its effects. However, further evaluation is needed.

7.3.2 The perception of the importance of music

As discussed in 7.2.3, those who regard music as important are more likely to benefit from its therapeutic effects.

In this research, participants were asked to rate the level of importance of music in their lives. The largest percentage (41%) reported that music was very important to them with only 8% reporting that it was not. Due to the subject of the research, there was a high probability of positive ratings; those with no interest in music were unlikely to have taken part in the research. However, given the limited opportunities that participants had for listening to music, for any of them to say that it was 'very important' was interesting.

Baseline assessments of the three dependent variables showed no significant differences between those who considered music 'very important', 'important', 'quite important' or 'not important'. However, there were significant differences in the results. The analysis showed that for those who rated music as being very important there were statistically significant findings for each of the dependent variables; for those who did not consider music to be important, there were none.

The reason for these significant differences may lie in the degree of involvement with music. For example, although it was not possible to assess with any accuracy, it is likely that those who said music was important to them, adhered more closely to the programme. They had already identified themselves as being frequent listeners, (p.204). Greater involvement with music has already been established as a prerequisite for therapeutic possibilities. As has already been quoted, MacDonald (2000) stated, 'the greater the personal involvement, the more effective the possibilities for distraction and relaxation' (p.58). These findings suggest that this was true for the participants in this study.

7.3.3 Age group differences

No differences were found between the two age groups in baseline scores of the three dependent variables but the impact of the intervention differed in its effect. To find that the older participants showed greater benefits was surprising.

The analysis, detailed in Chapter Five (p.188), showed that the range of effect for those over and under the age of 87 differed significantly, with the former benefiting to a greater degree than the latter. For example, those in Group One (experimental) over the age of 87 showed a significant decrease in pain levels, whilst those in the younger cohort showed no significant differences. There were similar findings for those in Group Two; those over 87 showed a significant decline in pain levels during the experimental period of the research, whereas for those under 87 there was a only a very slight decrease.

The same analysis was carried out with anxiety scores. The results were not as significant as those for pain, but nevertheless were of interest. In the first research period, both age groups in Group One (experimental) showed a significant reduction in anxiety scores; this was followed by a significant increase in those over 87, bringing their anxiety scores close to baseline levels, and a smaller non-significant increase in those under 87. Those over 87 showed a greater decrease of anxiety across the whole research period.

The results for Group Two were also as expected in that significant decreases of anxiety were found as a result of the intervention period for both age groups. However, there was a significant difference between the two age groups at the start of the music intervention period with those over 87 showing lower anxiety levels overall.

When depression scores were analysed in this way, minimal age group differences were found. The findings for both age groups in Group One and Two showed the expected significant reduction in response to the music intervention. The over 87s had slightly lower levels of depression overall but these were not significant.

The differences found in the benefits to pain perception between the two age groups is surprising, particularly as the same degree of difference was not found in anxiety and depression levels.

The reasons for this greater effect are unclear and the findings counter-intuitive. However, it is encouraging to observe that the oldest group demonstrated a clear benefit from the music. There have been some who suggest that in old age there is a flattening of response and less emotional activity (Kunzman et al. 2000), thus implying that there would be less response to music. However, Saarkallio (2010) found no weakening of emotion regulation abilities and considers that music should continue to be used to improve mood, distract and relax. These findings would support that

conclusion and demonstrates that age, even extreme old age is no barrier to enjoying music's effects.

7.3.4 The effect of musical genre

In Chapter Three (p.63), reference is made to the suggestion of Nilsson (2008) that the genre of music used in a music intervention does not seem to influence its effectiveness. As Gabrielsson (2002) asserts, a strong experience of music can be associated with almost any genre. This is fundamental to understanding the benefits of taking music preferences into account.

It is to be expected that within any sample there will be a range of preferred genres and styles of music. It was therefore anticipated that the range of music selected in this study would be diverse. However, this was not the case. Eighty percent of the participants selected classical music, with only 19% choosing other genres. In order to assess if there were any differences in effect between classical music and other genres, the latter were grouped together into one category and described as 'non-classical' music.

Both categories of music were found to be effective in decreasing levels of depression and anxiety. Levels of significance were greater in the classical music category and there was also a significant decrease of pain, suggesting an overall greater benefit. However, these findings should not be regarded with great confidence. The two groups were not evenly balanced ($N = 91$; $N = 22$) and the categories artificial. Within the classical genre itself, there was a wide range of styles chosen. The difference between them were as much or greater than the difference between, for example, a light classical choice and a folk song.

There may be an additional explanation. Classical music programmes were easier to prepare, partly due to my greater knowledge of that genre, and partly because some of the music requested from other genres was difficult to accommodate. Some of these were particularly challenging. For

example, one participant requested Jamaican dance music; another requested Ethiopian liturgical music; another requested very specific Scottish reels. Such requests were not always easy to accommodate and, in some cases, the effect of the intervention may therefore have been compromised.

7.3.5 Clear musical preference

Some participants were able to give more detailed information of their music preferences than others. This was either due to varied cognitive function or to differing experiences or knowledge of music. Of the sample, 38 participants (34%) were able to give quite detailed information of their preferences. Some had a good knowledge of the music that they enjoyed, some were able to specify particular pieces, whilst others could give information about their choice of instruments, composers and style of music. Although everyone could provide some information, the remaining 66 participants were less able to give much detail.

The literature review referred to the establishment of preference as being an important variable in the effectiveness of a music intervention. It is likely that the use of non-preferred music for a three-week intervention would have resulted in greater attrition and less adherence to the intervention. The individual involvement in the selection of preferred music guaranteed greater interest in the study, greater enjoyment and therefore greater emotional arousal. It was also more probable that the music acted as a distraction.

This may explain the reason for the particular benefits shown to those who were able to make their preferences very clear. This was assessed by dividing participants into two groups; those who could give clear indications of preference, and those who were not so clear. Inevitably, this was a somewhat arbitrary division. It does not suggest that those who were less clear were unable to give any information; rather, it highlights the clarity of the information that the remaining 34% were able to provide.

As presented in Chapter Five (p.206), for those who could give clear assessments of their music preferences, there were significant decreases in pain (VDS and IPT) for the experimental group in the first research period. This decrease continued after the intervention ended. For the same period, for those who were not so able to be clear in their preferences, there were no significant findings. During Intervention Two, although there were decreases in pain levels, these did not reach significance. Findings for anxiety and depression were not so affected by whether the preferences were clear or not.

These results suggest that the use of preferred music is of particular importance for the effect of music on pain to be realised. This was also recognised in the pilot studies. Not only were the effects significant but they persisted for a greater period of time with ongoing reductions after the completion of the music intervention. This is of particular interest for the maintenance of effects following a music intervention as discussed in 7.2.2.

7.3.6 High anxiety levels

The presentation of the findings in Chapter Five detailed the effect of variables such as age and gender on the effect of the music intervention. There were a range of situations or conditions that resulted in participants having particularly high levels of anxiety. These are discussed below.

7.3.6.1 Gender

As discussed in the literature review, females are at greater risk of experiencing anxiety and depression than males (de Beurs et al. 2000; Espinoza and Kaurmann, 2014). These findings confirmed that this was true for anxiety but not for depression. When baseline assessments were made at the start of the research study, there were no statistically significant differences between the genders in levels of either pain, depression or anxiety. For pain and depression, the mean

scores were almost identical. For example, the mean scores of the pain levels for males were 54.43 and for females it was 54.53; for depression they were 51.55 for males and 52.18 for females. However, the differences in anxiety were more pronounced as a Mann-Whitney test demonstrated: ($U = 878$, $Z = 1.187$, $P = 0.235$) with males showing lower anxiety levels than females. This difference between the genders was further confirmed by an analysis of those with high and low levels of anxiety. It showed that 33% of the male sample suffered from high levels of anxiety, as compared to 72% of the female sample.

The analysis of the individual items of the assessment scale showed that in eight of the 11 items that assessed anxiety, females experienced greater levels than males. Of those eight, the greatest differences were found in feelings of relaxation and calm; these differences reached significance in five of the weekly assessments. Despite the higher levels of anxiety experienced by the females, both males and females experienced similar benefits. For example, during Intervention One, results for overall levels of anxiety amongst the females were: ($Z = 3.466$, $N\text{-Ties} = 29$, $P = 0.001$); during the same period, the results for males were: ($Z = 2.842$, $N\text{-Ties} = 13$, $P = 0.004$).

Although these findings confirm greater anxiety levels in females, the benefits to both genders were both significant.

7.3.6.2 Sight loss

Sight loss has also been identified as being a high risk for anxiety in old age (de Beurs et al. 2000). Adaptation to a life without sight is difficult in old age; it reduces functional abilities and results in a further decline of independence and autonomy. Although the numbers of those with severe sight loss were few ($N = 8$), the increased anxiety was notable and this was demonstrated by the significant differences in baseline scores: $U = 172$, $Z = 2.129$, $P = 0.033$). The effects of the music intervention were not found to be significant ($Z = 1.761$, $N\text{-Ties} = 4$, $P = 0.078$), but music may be helpful in reducing the symptoms of anxiety if made available through an easy to use music player.

7.3.6.3 Length of stay

The significant difference in anxiety levels between those who had been in the care home for over two years and those who had been there for less than that was an unexpected finding. The difference in their median ages was slight (85 and 87). As health and function are expected to decline quite rapidly within this population, it might be assumed that the longer the stay, the greater the likelihood of decline and correspondingly high anxiety levels. However, this was not the case. The difference in scores may suggest that the move and subsequent adaptation to life in a care home causes considerable stress and anxiety and only reduces after some considerable time. It is suggested that the accumulation of negative conditions at this stage of life makes it more difficult to adapt to new situations.

7.3.6.4 Expectation of benefit

Approximately half the sample (53%) thought that listening to music would benefit them in some way. With the exception of one participant who thought that music would not be of benefit, the remainder were not sure. This latter group experienced significantly more anxiety than the former, not only at baseline but also throughout the research period, except for the second week when the difference was not significant. This was also true for levels of depression and pain, although to a lesser extent. The reasons for this are not clear. It may be that those who expected music to benefit them were of a more positive and optimistic disposition. This would explain the higher levels of anxiety of those in the 'non-expectant' group.

Despite the differences in anxiety levels, the intervention showed statistically significant improvements to both categories for all dependent variables. Those who did not expect music to benefit them showed a greater overall benefit to anxiety and a slightly less overall benefit to depression and pain.

These results show little difference in effect between the two groups. Expectation of benefit has been considered to be one of the factors that mediate some of music's benefits. This was found by North and Hargreaves (2008) who suggest that the intensity and quality of pain experiences can be mediated by, amongst other factors, expectation and suggestion. This was the reason for the question's inclusion in the assessment of music preference.

Although it may be the case that some expectation of benefit may give rise to greater involvement with the music, this result suggests that those suffering, say, from severe depression and unable to register any belief that music may help them, may indeed benefit. It may also be true of those with dementia.

7.3.6.5 Frequency of music listening

The majority of the participants reported that they listened to music only occasionally (62%) whilst 23% reported that they listened every day. As the opportunities for listening to music were so few, this latter percentage was surprising. Baseline assessments showed that those who listened occasionally had significantly greater anxiety and depression levels than those who listened more frequently. Their self-rating of health was also higher. This suggests that those who listened more often were already benefiting from the effect of the music, particularly in relation to anxiety and, to a lesser extent, to depression. These differences in anxiety levels remained statistically significant throughout the research period. However, this was not true of pain levels, which were higher than for those who listened more infrequently. Again, this latter finding is unexpected and adds another dimension to the discussion on the effects of the music on pain as discussed earlier in the chapter (pages 286 and 293).

As participation in the study involved frequent listening to the music, it is likely that any differences in the effect of the intervention were due to the levels of importance attached to music. It was found

that frequent listeners were also those for whom music was more important. It was therefore expected that the greatest effects would be found in the frequent listeners. This was indeed the case with highly significant decreases in anxiety and depression for both experimental groups and significant decreases in pain in the first experimental group.

7.3.6.6 Summary of effect of high anxiety

These findings suggest that older females, those with severe sight loss and those who have recently moved into a care home may experience particularly high levels of anxiety. Listening to music may be helpful in providing some relief and a distraction from their situations.

7.3.7 Strengths and limitations

There are many challenges associated with conducting research amongst the care home population. Some of them may limit the validity of the research. These are discussed, as well as the strengths that arose from the choice of methodology and intervention.

7.3.7.1 Internal validity

As discussed in the literature review, much of the previous research into the therapeutic use of music has been strongly criticised for the weakness of its methodology. This study attempted to address some of those criticisms. In Chapter Four, attention was drawn to the two principal failings of previous research studies: the lack of randomisation and small samples. These, together with other factors that contribute to the validity of a research study, are now considered.

The RCT has been identified as being the best vehicle for measuring the effectiveness of an intervention. It ensures that the variables are balanced across the groups and gives some assurance that any positive results can be attributed to the intervention rather than to, say, a

placebo effect, the influence of the researcher or to the range of other variables, such as changes in the weather, that can occur during a research study.

Randomisation was carried out after the process of recruitment in each care home. The process used is described in Chapter Five (p.148) and details of the two groups are provided in Figure 5.8. Randomisation proved to be successful, as there were no statistically significant differences found between the two groups in terms of age, gender, marital status, educational background, ethnicity as well as baseline assessments of pain, depression and anxiety. This served to minimise any selection bias. Participants were told of their group allocation on the first day of data collection thus ensuring proper concealment.

Sample size, as discussed in part two of the literature review in Chapter Three (page 69), has been a recurring topic of discussion in this field of research. Small samples have hindered reliable analysis as they lack the power needed to detect changes and may produce either false positive and/or false negative results. However, the recruitment of participants, particularly amongst older people, is challenging. Studies included in the literature review show the range of samples used: 23 (Finlay, 2014), 30 (Schorr, 1993; Guétin et al. 2009), 47 (Chan et al. (2009) and 66 (McCaffrey and Freeman, 2003). Although the target of 120 participants was not quite achieved, the recruitment of 117 contributed to a greater confidence in the validity of the findings and was a strength of the study.

Maratos et al. (2008), the authors of a Cochrane review, acknowledge that bias is impossible to avoid completely. Although every effort was made to reduce the potential for bias, the nature of this study made it impossible for this to be achieved at every stage of the procedure.

The successful randomisation, evidenced by the baseline assessments presented in Chapter Five (p.155), ensured the avoidance of selection bias; performance bias was avoided by applying the

same treatment protocol to participants in both the experimental and control conditions. However, it was not possible to blind either participants or the interviewer to the group allocations, an important indicator of a study's validity. Although Cepeda et al. (2006), also authors of a Cochrane review, recognise that the blinding of participants to their group allocation is rarely possible to achieve in music interventions, Maratos et al. (2008) point out that the risk of bias is high if the researcher is not blinded to the allocation status of the participants; Nilsson (2008) suggests that results can be over-emphasised by as much as 17%. In order to reduce this risk of detection bias a number of strategies were implemented. Every effort was made to ensure that each interview was conducted in the same way, using pre-coded assessments, a consistent use of language, and by avoiding leading questions or reacting with surprise or disapproval. Every effort was also made to be rigorous and accurate in the reporting of scores. However, it is recognised that as the sole researcher of the study, it is not possible to provide complete assurance of unbiased outcomes.

There were other risks of bias. In any study that involves older people, the risks from high rates of attrition are strong. This study was no exception. Although the switching over of the two groups avoided any withdrawals due to the disappointment of being allocated only to a control group, some level of attrition was inevitable. Prior to the start of the intervention, four of the 117 participants withdrew due to a sudden and severe decline in health (two), death (one) and intense fatigue (one). Over the course of the intervention there were 26 withdrawals, 23% of the total: nine from Group One and 17 from Group Two. By the last week of the study, there were 46 participants in Group One and 41 in Group Two. The reasons for withdrawal were more wide ranging than were anticipated. They included illness, admittance to hospital, relocation, insufficient hearing, insufficient cognitive ability, complaints from neighbours regarding the music's volume, anxiety about the music players, inability to use the music player or an unwillingness to answer the questions.

Five participants withdrew due to a 'fear' of the music player. They disliked having something strange in their room and it appeared to cause them considerable anxiety. A further four withdrew

due to difficulties with the operation of the music player. Although the second and third pilot studies gave warning of potential difficulties in the operation of the music player, the notion that some would find it an object of fear and anxiety was totally unexpected. Those that withdrew due to insufficient hearing had problems with their hearing aids; they distorted the music, making it unpleasant to listen to. These issues only came to light after the start of the study.

In addition to the withdrawals, there were some weekly absences due to hospital visits, holidays, attendance at funerals or illness. It had been hoped that these absences would be less frequent in the care home population. This was not the case; there were often four participants who were unable to take part in the once-weekly assessment.

In an article reflecting on the challenges of research of this nature, Bowsher et al. (1993) observed that there is a high probability of attrition rates in research involving care home residents. They referred to two studies, both carried out in nursing homes, whose attrition rates were between 24% and 45%. The reasons cited for withdrawal were almost identical to the ones encountered in this research. This suggests that the attrition rate of 23% was not a weakness that can be attributed to the research design, but was simply a reflection of the reality of research amongst this population.

As detailed in the description of the pilot studies in Chapter Four, the items included in the assessments were carefully considered for their suitability and relevance to the older population with its range of cognitive function and levels of energy. The two assessments of pain, the VDS and the IPT were well understood and their completion presented no difficulty to the participants. In addition, it was observed that even for those unable to read, the use of the IPT remained within their capabilities through a simple description of its colours, numbers and words. In order to ensure that the questions asked were suitable for the functional abilities of the sample, the questions selected were not difficult to understand; in order to cater for the reduced energy levels of the

sample, the number of questions was restricted. To ensure relevance, the selected questions referred only to the current activities of their lives.

It is generally agreed that the reliability of results increases with the number of items included in questionnaires. However, this approach is not tenable when assessing frail older people. As was found in the pilot studies, a shortened scale that avoided very personal questions was both more appropriate, led to less missed or 'I don't know' responses and resulted in less interview fatigue. This approach is recommended by Dennis et al. (2007) as discussed in Chapter Four. It is hoped that these adaptations resulted in greater accuracy rather than less.

There are a number of advantages but also some limitations to the use of interviews. Some of these became apparent during the pilot studies. Others became obvious only during the course of the main study. The obvious advantages lie in the opportunity to collect qualitative data, observe body language and facial expressions and gain additional perspectives on participants' lives that would not otherwise be available. The limitations lie in the number of variables that are not possible to control. The extent to which they reduced the validity of the data is unknown. It is impossible to avoid the influence that the interviewer has on each participant; it is dependent on his or her age, gender, style and manner. Irrespective of whether the participant's reaction to the interviewer is favourable or not, it will affect his or her attitude to the research study in general, and to the responses required of them in particular. It can affect the quality and amount of data. For example, a participant may show false improvements to their levels of pain or mood in an attempt to be helpful.

It is natural for some participants to want to present themselves in a good light. For example, they may be reluctant to admit to loneliness or dissatisfaction with life. This is understandable. As Sandvik et al. (1993) comment, admitting to unhappiness equates to admitting to failure. An example of this was found in the questions that related to boredom. Whilst participants were

reluctant to affirm that they were bored in response to a direct question, they were more likely to make passing references to it when talking of other things. This was shown in the analysis of the quantitative and qualitative data. Results of the former found no significant decrease in boredom as a result of listening to music. However, one of the themes that emerged from the qualitative data was a decrease in boredom.

There were some instances where the participants' reactions were obvious. Despite the attempts made to ask questions that were pertinent to their lives, there were a few who either resented the personal nature of the questions or found them irrelevant. One such participant exclaimed with exasperation, 'these are ridiculous questions.' Although their responses may have been accurate, their more negative attitude may have affected the outcome of the intervention.

As described, the assessment scales were adapted for those with varying levels of cognitive function. In addition, different strategies were put in place to ensure that all participants were able to respond to the best of their abilities. For example, the same instructions were repeated each week. This included a reiteration of the 'right now' answers needed for completion of the anxiety scale, as compared to the 'during the last few days' answers required for the assessment of depression.

In some cases, variations in mood affected the progress of the interview. Within the small world of the care home, apparently trivial situations could lead to swift changes in affect. For example, dislike of a meal, irritation with a carer or the cancelling of a hospital appointment could cause turmoil and upset. In some cases, a minor event affected their willingness to co-operate.

Due to the number of interviews conducted during the course of the day, it was not possible for all the participants to be interviewed at a time when they were feeling at their best. Many were prone to poor mood when tired or hungry and may have made less of an effort when answering the questions, possibly resulting in less accurate responses.

Participants in interviews are always susceptible to providing inaccurate data, often unwittingly. In this research, the participants' vulnerability to mood change and fatigue were the principal factors that may have lessened the validity of the data. This was unavoidable.

Given that the analysis of the data was dependent on the data collected in these interviews, the inclusion of the objective assessments of the care staff was an important addition to the data. Although only completed for 57% of the sample, the findings corresponded well with those of the participants. This gave some confidence for the use of self-report measures with older people and indicated that their data were reliable. The inclusion of further objective measures would have contributed further to confidence in the findings. This was beyond the scope of this study, but might have included data on the uptake of analgesic medication, measures of blood pressure, heart rate variability or cortisol levels.

Although every effort was made to secure accurate responses, the characteristics of this sample, as described throughout these chapters, gave rise to several limiting factors. It was impossible to determine to what extent the internal validity of the study was affected by them.

7.3.7.2 The establishment of music preference

As described in Chapter Four, the provision of individual, tailored programmes was fundamental to the design of this research study. The establishment of participants' preferences was therefore an important part of the research procedure. The questionnaire, described on page 150, was based on the APMP questionnaire (Gerdner et al. 2000) and adapted and expanded for this research study. The range of questions allowed for very clear preferences to be established in those with good cognitive function and appreciation of music. For those with less ability to answer the questions, there was room for some flexibility as to the level of detail requested. In all but a few cases, the programmes provided were enjoyed. As a means of establishing individual preferences, the questionnaire was a source of information that contributed to the effectiveness of the music

programme. As the discussion on the differences in effect between those who were very clear and those who were less clear in their preferences shows (p.317), the more information provided, the more enjoyment and potential benefit that the participants received.

7.3.7.3 Some limitations of music preference

Despite the many benefits of preferred music used for therapeutic purposes, there are some situations in which its effectiveness may be reduced. For example, over a three-week period, a participant may tire of the selected programme. As was discussed in the literature review (p. 61), over-familiarity with music may lessen the degree of preference. This possibility was mitigated by the provision of extensive programmes of at least 90 minutes duration. Participants were able to exercise some choice in the music that they listened to each day.

Changes in mood or in physical wellbeing may also affect the level of response; what is appropriate to listen to on one day might not be so appropriate on another. As Kemper and Danhauer (2005) observe, the same individual may want to listen to different music when in different circumstances. Although there was little variation in the external circumstances of the participants, changes in their mood or levels of pain may have influenced their appreciation of music. For example, in cases of extreme pain, some participants found music that was previously enjoyed and appreciated to be irritating and not sufficiently distracting. In a study of this size, it is not possible to cater for these daily variations.

There are also the strong emotional responses to music that may occur when particular memories of the past are evoked. This may be a very positive reaction, as was found for some of the participants discussed in 7.1.3. However, for others, there are pieces of music that may elicit very strong negative reactions and are better avoided. For example, one participant specifically requested that no Gilbert and Sullivan should be included in her programme as it reminded her of a period in her life that she wanted to forget. Another could not bear to listen to 'The Four Last Songs'

of Richard Strauss. Others were not able to be so specific and it was therefore impossible to avoid this possibility. One participant spoke of her fear of having her emotions stirred up again. There is therefore a risk that some programmes unwittingly contained music unsuitable for delivering a beneficial response.

These three factors, boredom from over-exposure to the music, the different requirements of music dependent on mood, and negative reactions caused by painful memories may have occurred in this study to some extent.

7.3.7.4 Music 'dosage'

The daily 'dose' of 30 minutes of music-listening was chosen because it was not an overly onerous request to those not so accustomed to listening to music. Longer periods may have resulted in further attrition or less compliance. Results from the weekly assessments showed that it was a sufficient length of time for benefits to be realised from day to day.

7.3.7.5 Music delivery

Recent technological developments have made listening to music increasingly accessible, convenient, portable and cheap (Lonsdale and North, 2011). These changes in music listening habits have been adopted by a wide range of contemporary society, but are viewed with some trepidation by many of the older generations who were shaped by the musical culture of their childhood and youth. Flowers and Murphy (2001), when conducting interviews with older adults about their listening habits, found that radio and television were the principal modalities for music listening. This was also found to be the case in a study carried out by Sixsmith and Gibson (2007) in which none of the participants, all of them in residential care, had access to CD players or any other form of technology suitable for listening to music. This was the case in each of the care homes that took part in this study. For many participants, even a CD player was unfamiliar, baffling

both to operate and to understand.

The transition from a CD player to the USB memory stick player supplied by the RNIB, was a marked improvement. Its simplicity of use, quality of sound and suitability for those with some degree of sight loss was a great improvement. However, there were several participants for whom the difficulties of operation remained insurmountable and, as already discussed, four participants withdrew for this reason.

A further five participants reacted with such fear and suspicion of the music players that they withdrew. This was an extreme reaction and unexpected. For some of them, strange objects of any kind were viewed with suspicion; they liked the familiarity of their own things around them.

Alternative solutions need to be found, both for the benefit of future research studies within the care home population and for residents who would like to listen to music of their choice more easily. Currently, there are few affordable options. For future enquiry, simple switches, as used for a range of different purposes by those with disabilities, could be investigated. Another option might be the use of streaming. Two earlier studies carried out by Janata (2012) and Guétin et al. (2009) arranged for music to be streamed directly to participants' rooms. In the latter study, the music was then listened to using headphones. Although there may be several advantages to this method of delivery, particularly for dementia patients or for those with limited cognitive function, it should be noted that it does not allow for control over the choice or timing of the music listened to. This feeling of control was identified by Brown et al. (1989) as an important factor in counteracting negative responses to pain. For some participants in this study, the opportunity to choose the music and to control its use was a contributory factor to their enjoyment in taking part.

Complaints, or fears of complaints from neighbours over the volume of the music were added difficulties. These were unexpected difficulties and surprising, given that there were no complaints made about televisions. Due to the numbers of those with hearing difficulties it was not viable for many of them to listen at a lower volume. There is also the danger that if the volume of music is

reduced to the level of a background accompaniment, it may, according to Thaut (2005) lead to such habituation that levels of arousal are weakened. If this occurs, the effects of the music intervention may be compromised.

Headphones would be the most obvious solution to those of a different generation. However, for the majority of these participants this was not a viable option. They found them uncomfortable if used in conjunction with hearing aids. They were also regarded with some suspicion; another 'new' piece of technological equipment, perhaps difficult to use and not something that many of them would even consider.

It is clear that another approach is needed. This is not only for conducting future research amongst the oldest old, but also for the benefit of all people of this generation.

7.3.7.6 Adherence

A further factor that, in some cases may have limited the potential benefits of the intervention, was adherence to the music intervention. Although adherence was good in Pilot Study One, assistance was needed in Studies Two and Three to ensure that participants listened to the music. Poor memory and inability to operate the music player were the two limiting factors and it was anticipated that these would continue to be an issue in Study One.

Other studies have ensured good adherence by involving the participants in keeping reports. For example, Siedliecki and Good (2004) and Guétin et al. (2009) all asked participants to note the duration of each days' listening times. This was useful in ensuring continued participation and also to determine differences in effect dependent on the number of hours listened. However, this was not viable within this sample as very few would have been capable of recording the information accurately.

Care staff were able to help both in cases where participants were unable to operate the music players and when there was memory loss or confusion. However, the level of help varied, and again, it was not possible to obtain from them a record of the days and times of listening. It is probable that staff assistance was more reliable in some cases than others.

Neither was it possible to determine the listening patterns of those who were able to operate the music players, or, in some cases, their own CD players. Each week, those in the experimental groups were asked about how much they had listened to the music, but there was no guarantee of the accuracy of their responses. The majority were keen to give a good impression and may have been reluctant to report any failure to listen.

These issues of adherence are a particular issue within the care home population. Further assistance would help to ensure that the minimum listening periods were adhered to.

7.3.7.7 Care staff

Each care home had a different attitude to the amount of help that they were willing to give to the research. It was largely dependent on the individual staff who varied in attitude and reliability. Some were keen to help and support the research, whilst others saw it as a rather unwelcome addition to their busy workload. It was not possible to procure regular reports of adherence or participant response.

Care staff were requested to complete simple questionnaires regarding their opinion of the individual's levels of pain, depression and anxiety at the start of the research period. Although there was a general willingness to comply, the response was disappointing. Only 56% of the forms were completed and it could not be guaranteed that these had been completed at the same time as the baseline assessment of the participants. A repeat questionnaire at the end of the research would have been of great value, but this was not possible.

The assistance of care staff is important in research of this kind. However, it cannot always be relied upon. In one care home, a key member of staff was off sick for several weeks and this resulted in less cooperation from the remaining team.

7.3.7.8 The Control group

Those in the control condition were instructed to continue life as normal and were not given any instructions as to whether they could listen to music whilst in the control period. Although this had the potential for lessening the differences between the conditions, it is unlikely that this occurred in this study. The numbers of those who were in the habit of listening regularly and who had the opportunity to do so were very few.

7.3.7.9 External validity

Whether or not the findings from this study are generalisable to a larger care home population or not is difficult to assess. However, there are some grounds for confidence. This lies in the fact that the sample did not depend on just one care home for its assessment of the three dependent variables. The nine different care homes that participated in the study differed in catchment area and in the range of conditions catered for, but nevertheless, no statistical baseline differences were found between them in terms of age, marital status, education and health status. Neither were there any differences found for baseline measurements of the three dependent variables. This suggests that similar samples would be found in other care homes. This is further supported by the fact that the incidence of pain, depression and anxiety within the sample was broadly comparable to that found in the wider care home population. Details of the comparable percentages can be found on pages 157 and 160.

There is therefore a basis for the suggestion that these findings may be generalisable to the wider care home population. However, it should be noted that the sample was not representative of the care home population as a whole. Recruitment was limited to those with adequate cognitive

function and hearing to facilitate the assessment of the outcomes. Suitable participants formed a minority in each location and statistics indicate that this would be the case in most care homes in the UK. Despite this difference, there is no evidence to suggest that superior cognitive function is necessary in order to benefit from listening to music; it merely facilitates more valid assessment. I would suggest, therefore, that there are good reasons to believe that a music intervention of this kind would result in similarly positive findings amongst a wider group from the care home population and with older people in general.

7.3.7.10 Summary of strengths and limitations

As is evident from this discussion, there were a number of strengths and limitations inherent to this study. The latter, largely due to the multiple challenges of conducting research of this nature, were not possible to avoid, but are important to recognise for their threat to validity. There were also the limitations that were due to conducting a research study of this nature single-handed and the consequent potential for bias. To what degree the accuracy of results was compromised is impossible to ascertain.

7.3.8 Future research

There are a number of issues arising from this study that point to areas suitable for further research. Most relevant to the results found for the principal research question regarding the impact of listening to music on pain, depression and anxiety, is the need for a comparison of the relative effects of listening to music on pain and on mood. The variation in results, which is difficult to explain, raises questions as to whether there are particular factors that could be identified as being important for the relief of pain, perhaps separately from the relief of anxiety and depression. This study found that for individuals in severe pain or with high levels of anxiety, listening to music had little effect on relieving the perception of pain. It also found that the clear identification of musical preference contributed to greater pain relief (p.317), but was less important for the relief of anxiety

and depression. This would be an interesting area for research and one that has, as yet, not been pursued. By recruiting only those suffering from some degree of pain, the effects of music could be more readily assessed.

A further area for future research relates to the cumulative effect shown for the effect of music on depression and to a lesser extent on anxiety and pain. It suggests that the benefits of listening to music might increase if a longer time frame were introduced. This could be assessed in conjunction with an investigation into the optimum period of time needed for the length of daily sessions.

One of the weaknesses of this study was the reliance on self-report as the primary method of assessment. As previously discussed (p.328) the addition of an objective measure to a study of this kind would enhance the validity of the findings and lend greater confidence in the findings. One such measure that is of particular interest to this population group is the assessment of cortisol levels. Many of the diseases prevalent in old age, such as diabetes or Alzheimer's disease, have been associated with raised cortisol levels (Otte et al., 2005) and it would be of great benefit if music were found to assist in lowering them. The combined use of self-report and an objective measure would generate greater confidence in the results.

The effect of other variables could also be investigated. I have explored the effect of gender, age, the importance of music, frequency of listening and expectation of benefit. Others, such as the effect of ethnic origin, of personality and of spiritual beliefs would also be of interest. For example, an exploration of any differences of attitude and response to music in those of other ethnic origins would contribute to a better understanding of the most effective use of music for people of all backgrounds.

As discussed in 7.2.7.4, future research needs to enquire further into different methods of music delivery. It is important to find a method of delivery that does not add to the anxiety already prevalent in the lives of those living in care homes, and that is not reliant on others to operate.

These suggestions for future research refer both to the effects of music as a therapeutic intervention (whether there is a difference in effect on pain or mood; whether the cumulative effects continue) and also to the use of music for the oldest old (whether listening to music could have a significant effect on lowering cortisol levels). This continues to be an area of research with many different lines of enquiry. Where these can assist in the most effective delivery of music to the oldest old of our society, it could assist in the improvement to the wellbeing of this vulnerable and expanding section of the population.

A summary of the findings and their implications conclude the thesis in Chapter Eight.

8 Chapter Eight

8.1 Conclusion

The purpose of this research study was to further the enquiry into the potential therapeutic effects of music amongst the care home population of older people. Although not a new field of research, there is an increasing interest in the health and quality of life of those in the last years of their lives. This is true at all levels of society, from those in government, seeking to provide cost-effective services, to individuals caring for their older family members. With the rapidly growing numbers of those in their late 80s and over, this is an issue that can only become more prominent in the coming decades.

The research found measurable evidence for music's positive effect on older people. An important element of the study was the emphasis on providing music in a way that could easily be replicated and at a low cost. If the former were to be achieved, but the implementation was beyond the capability or resources of care home staff, the findings of the study would have little or no wider benefit.

As set out in Chapter Seven, the findings have shown that regular listening to preferred music can in some cases provide relief for pain, depression and anxiety. Although there were threats to the validity of the study from attrition, and the assessments were reliant on individuals, some of whom had compromised cognitive function, it is suggested that, nonetheless, the provision of participant-selected, recorded music may be regarded as having made a significant difference to the lives of many. In addressing criticisms of previous research studies, some earlier methodological weaknesses were avoided and every effort was made to ensure that the procedure was explained in detail so that it could be replicated in other environments.

In addition to confirming music's therapeutic effects, there were other findings that provide some practical guidelines for the successful application of a music-listening programme. For example, the results showed that while the music's effects were cumulative over the period for which it was available, it was also the case that these were short-lived beyond the overall period of intervention. This would therefore indicate that for the benefits to be maintained and even enhanced, the period of music listening should be extended (perhaps indefinitely). It seems that by providing a regular, ongoing programme of music-listening, it may be possible to make a significant difference to the health and wellbeing of many of the care home population.

The mixed-methods approach allowed for an exploration of the different factors that inform the individual response to music. Despite the universal appreciation for music within the general population, the results showed that there were some participants who benefited more than others from the intervention. No therapeutic treatment will help everyone and this is true of music too. It is clearly important to identify those for whom a music-listening programme would be the most beneficial. The findings suggest that it is those who at some stage in their lives have listened frequently or been engaged with music in some way, and who consider music to be important to them, who are likely to benefit the most. It is therefore recommended that these factors are taken into account when implementing a programme of music in a care home.

Although the study raised issues regarding the practical delivery of the music, these are not fundamental obstacles to providing music for care home residents. It is therefore recommended that every attempt be made to discover alternative delivery mechanisms that are suitable and cost-effective for this vulnerable population. With the continuing development of different technologies and the growing focus on the wellbeing of older people, this is a challenge waiting to be addressed.

As a result of this study, a number of guidelines could be prepared for care home managers interested in providing an effective music-listening programme. This might include information on

the selection of suitable music, recommendations for the duration of a programme and guidelines for the delivery of the music. In addition, a series of questions could be formulated in order for care staff to best identify those for whom a programme might be of benefit.

Little has been written about the lives of care home residents. Studies tend to be small and carried out over a short period of time. This study provided the opportunity to talk at length to a large number of residents in a range of institutions. For the participants, the interviews were an opportunity to talk in confidence about their lives to someone not associated with family or staff. This gave them the freedom to speak openly about the challenges of their lives. Although, as described in Chapter Five, participants came from a wide range of backgrounds, the results demonstrate that many of their experiences were common to them all. None of them was immune from the indignities and losses characteristic of the final months or years of life of those in care homes. A greater understanding of these challenges would surely be useful for those who have some non-professional association with care homes, such as family members or volunteers, or those providing outside entertainment such as musicians.

In conclusion, I believe that this study has contributed to knowledge in several ways. Firstly, it has shown that those in extreme old age, both male and female, may well be susceptible to music's benefits in relation to pain, anxiety and depression. It is suggested that the more regular the listening, the more likely that a beneficial effect will ensue.

Secondly, it has shown that a positive response to music cannot be guaranteed and not everyone will benefit to the same degree. There are two categories of people for whom listening to music may not be of benefit: those suffering from extreme pain or overwhelming emotional turmoil, and those who have little interest in music and who regard it as personally unimportant. In the former case, it is suggested that the distracting power of music is insufficient; in the latter, that there is little emotional arousal in response to the music. On the other hand, there are also categories of people

for whom music may be of particular benefit: those who have had some previous engagement with music in their lives, who listen frequently and for whom music is important.

Thirdly, the significant decreases found for pain, depression and anxiety confirm the use of preferred music as being of the utmost importance when seeking a therapeutic outcome. Using preferred music allowed for greater levels of enjoyment, an increased emotional response and some sense of autonomy resulting from the participation in the selection of the music.

Fourthly, the results indicate that a two-week period of music-listening is the minimum time frame required for the music to have a significant effect on levels of anxiety and depression; the time needed for an effective decrease in pain may be greater. The use of a sample with a higher incidence of pain would provide a better indication as to the timing and extent of music's effects.

Fifthly, contrary to findings from other studies, it was found that an expectation of music's benefits does not lead to a greater response. Reasons for this were not clear, but could be due to less awareness of the possibilities of music's therapeutic effects within members of this generation. Lastly, the findings contribute to a greater understanding of the lives of those in care homes.

In the future, continuing medical advances may alter the nature and experience of old age. However, this is not something that will be seen in the foreseeable future. The need for ongoing and persistent enquiry is therefore still urgent. I hope that these results will be a valuable contribution to the existing literature on the use of music to effect change, and will also be an encouragement to care home managers that listening to music can be an asset to health, and is worthy of being given a higher priority in busy schedules with limited resources.

It is recognised that both the challenges of research amongst this population and the necessarily constrained resources of student research are unavoidable limiting factors to this study. However, it

is hoped that the positive results, the explanations given of the methodology, the discussion of the procedural issues – strengths and limitations – will all combine to provide information that contributes to, and informs, the work of future research studies in this area.

BIBLIOGRAPHY

Age UK & T. House, (2012) *Agenda for later life*, Improving later life in tough times

Age UK (2015) *Later Life in the UK*, Available at: (http://www.ageuk.org.uk/Documents/EN-GB/Factsheets/Later_Life_UK_factsheet.pdf?dtrk=true), (accessed: 10 February 2015)

Åkerlind, I. & J.O. Hörnquist, (1992) 'Loneliness and alcohol abuse: A review of evidences of an interplay', *Social Science & Medicine*, 34 (4) pp.405-414

Akombo, D.O. (2006) '*The Effects of Listening to Music as an Intervention for Pain and Anxiety in Bone Marrow Transplant Patients*', PhD Thesis, University of Florida

Albans, K. & M. Johnsson (eds.) (2013) *God, Me and being very Old*, London: SCM Press

Aldridge, D. (1994) 'An overview of music therapy research', *Complementary Therapies in Medicine*, 2 (4) pp. 204-216

Allgulander, C. & P.W Lavori, (1993) 'Causes of death among 936 elderly patients with 'pure' anxiety neurosis in Stockholm County, Sweden, and in patients with depressive neurosis or both diagnoses', *Comprehensive Psychiatry*, 34 (5) pp. 299-302

Ames, D., E. Flynn, V. Tuckwell, & S. Harrigan, (1994) 'Diagnosis of psychiatric disorder in elderly general and geriatric hospital patients: Agecat and dsm-III-r compared', *International Journal of Geriatric Psychiatry*, 9 (8) pp. 627-633

Andersen, E., Malmgren, J.A., Carter, W.B. & D.L. Patrick, (1994) 'Screening for depression in well older adults: evaluation of a short form of the CES-D', *American Journal of Preventive Medicine*, 10 (2) pp. 77-84

APA (2013) 'Anxiety', Available at: (www.APA.org/topics/anxiety/index.aspx), (accessed: 10 Dec 2013)

Argstatter, D.P.H. & H.V. Bolay, (2006) 'Study of the effectiveness of musical stimulation during intracardiac catheterization', *Clinical Research in Cardiology*, 95 (10) pp.514- 522

Argyle, M. (1978) 'Discussion chapter: an appraisal of the new approach to the study of social behaviour', in Brenner, M., Marsh, P. & Brenner, M., (eds.) *The Social Contexts of Method*, London: Croom Helm, pp.237-255

Ashida, S. (2000) 'The effect of reminiscence music therapy sessions on changes in depressive symptoms in elderly persons with dementia', *Journal of Music Therapy*, 37 (3) pp. 170-182

- Asmundson, G.J. & K.D. Wright, (2004) 'Biopsychosocial approaches to pain' in Hadjistavropoulos, T., K.D. Craig (eds.) *Pain: psychological perspectives*, New Jersey: Lawrence Erlbaum Associates
- Aspinwall, L.G. (2001) 'Dealing with adversity: Self-regulation, coping, adaptation and health', in Tesser, A. & Schwarz, N. (eds.) *The Blackwell handbook of social psychology: volume 1*: Malden, MA: Blackwell. pp. 591-614
- Bailey, L.M. (1983) 'The effects of live music versus tape-recorded music on hospitalised cancer patients', *Music Therapy*, 3 (1), pp. 17-28
- Bair, M.J., R.L. Robinson, W. Katon & K. Kroenke, (2003) 'Depression and pain comorbidity: a literature review', *Archives of Internal Medicine*, 163 (20) pp. 24-33
- Baker, F. (2001) 'The effects of live, taped, and no music on people experiencing posttraumatic amnesia', *Journal of Music Therapy*, 38 (3) pp.170-192
- Baldwin, R.C. & D.J. Jolley, (1986) 'The prognosis of depression in old age', *The British Journal of Psychiatry*, 149 (5) pp. 574-583
- Baldwin, R. & R. Wild, (2004) 'Management of depression in later life', *Advances in Psychiatric Treatment*, 10 (2) pp.131-139
- Ball, P. (2010) *The Music Instinct: how music works and why we can't do without it*, London: Random House
- Baltes, P.B. (1997) 'On the incomplete architecture of human ontogeny: Selection, optimisation, and compensation as foundation of developmental theory', *American Psychologist*, 52 (4) pp.366-380
- Baltes, P.B. & K.U. Mayer, (1999) *The Berlin Aging Study: Aging from 70 to 100*, New York: Cambridge University Press.
- Baltes, P.B. & J. Smith, (2003) 'New frontiers in the future of aging: from successful aging of the young old to the dilemmas of the Fourth Age', *Gerontology*, 49 (2) pp.123-135
- Barber, J.B. & S.J. Gibson, (2009) 'Treatment of chronic non-malignant pain in the elderly', *Drug Safety*, 32 (6) pp.457-474
- Beard, J. (2013) *From talk to action: ageing, health and development*, Presented at: British Society of Gerontology conference, Oxford
- Beaumont, J. (2013) 'Measuring National Well-being - Older People and Loneliness', *Office for National Statistics*, Available at: (http://www.ons.gov.uk/ons.gov.uk/ons/dcp171766_304939.pdf), (accessed: 24 Nov 2013)
- Beecher, H.K. (1946) 'Pain in men wounded in battle', *Annals of Surgery*, 123 (1) pp. 96-105

- Beekman, A.T., S.W. Geerlings, D.J. Deeg, J.H. Smit, R.S. Schoevers, E. de Beurs, A.W. Braam, B.W. Penninx, & W. van Tilburg, (2002a) 'The natural history of late-life depression: a 6-year prospective study in the community', *Archives of General Psychiatry*, 59 (7) pp.605-611
- Beekman, A.T., B.W. Penninx, D.J. Deeg, E.D. Beurs, S.W. Geerlings & W.V. Tilburg, (2002b) 'The impact of depression on the well-being, disability and use of services in older adults: a longitudinal perspective', *Acta Psychiatrica Scandinavica*, 105 (1) pp.20-27
- Benedek, M. & C. Kaernbach, (2010) 'A continuous measure of phasic electrodermal activity', *Journal of Neuroscience Methods*, 190 (1) pp. 80-91
- Berlyne, D.E. (1971) '*Aesthetics and psychobiology*', Appleton-Century-Crofts, Michigan
- Berlyne, D.E. (1974) '*Studies in the New Experimental Aesthetics: Steps toward an objective psychology of Aesthetic Appreciation*', Oxford: Hemisphere
- Bertirotti, A. & S. Cobiauchi (2008) 'Music in the treatment of pain. Society, medicine and neurosciences', *Ambasciata d'Italia*, pp. 75-85
- Biley, F.C. (2000) 'The effects on patient well-being of music listening as a nursing intervention: a review of the literature', *Journal of Clinical Nursing*, 9 (5) pp.668-677
- Blood, A.J. & R.J. Zatorre (2001) 'Intensely pleasurable responses to music correlate with activity in brain regions implicated with reward and emotion', *Proceedings of the National Academy of Sciences*, 98 (20) pp.11818-11823
- Blood, I. & S. M. Bamford (2010) *Equality and diversity and older people with high support needs* York: Joseph Rowntree Foundation
- Bloom, D.E., D. Canning & G. Fink (2008) '*Population Aging and Economic Growth*', PGDA working paper no.31, Boston: Programme on the Global Demography of Aging
- Bloom, D.E. & D. Canning (2008) 'Population health and economic growth' in Spence, M. & M. Lewis (eds.) *Health and Growth*, Wasington: The World Bank
- Bloom, D.E., D. Canning & G. Fink (2011) 'Implications of Population Aging for Economic Growth', *Oxford Review of Economic Policy*, 26 (4) pp. 583-612
- Bloom, D.E., A. Boersch-Supan, P. McGee & A. Seike (2011) 'Population aging: facts, challenges, and responses', *Benefits and Compensation International*, 41(1) p.22
- Bowling, A. & P.D. Browne (1991) 'Social networks, health, and emotional well-being among the oldest old in London', *Journal of Gerontology*, 46 (1) pp.20-32

- Bowling, A., M. Farquhar & E. Grundy (1996) 'Associations with changes in life satisfaction among three samples of elderly people living at home', *International Journal of Geriatric Psychiatry*, 11 (12) pp.1077-1087
- Bowling, A., Z.Gabriel, D. Banister & S. Sutton (2002) 'Adding quality to quantity: Older people's views on their quality of life and its enhancement', *Seminar presentations 12-13 October 2004*, 9
- Bowling, A. (2005) '*Ageing Well: Quality of Life in Old Age*', Berkshire: Open University Press
- Bowling, A. (2009) '*Research Methods in Health*', 3rd edition, Maidenhead: OUP
- Bolton, M. (2012) '*Campaign to End Loneliness*', Oxford: Age UK
- Boyd, C. & D. Campbell (1992). '*Rhythms of Learning: Creative Tools for Developing Lifelong Skills*', New York: Hawker Brownlow Education
- Bowsher, J., M. Bramlett, I.M. Burnside & S.H. Gueldner (1993) 'Methodological considerations in the study of frail elderly people', *Journal of Advanced Nursing*, 18 (6) pp.873-879
- Bradt, J. (2012) 'Randomised controlled trials in music therapy: Guidelines for design and implementation', *Journal of Music Therapy*, 49 (2) pp.120-149
- Bradt, J., C. Dileo & M. Shim (2013) 'Music interventions for preoperative anxiety', *Cochrane Database Systematic Review*, 6
- Brandes, V. (2009) '*Music as medicine: incorporating scalable music-based interventions into standard medical practice*', Vienna: Springer, pp.83-103
- Brenes, G.A., J.M. Guralnik, J.D. Williamson, L.P. Fried, C. Simpson, E.M. Simonsick & B.W. Penninx, (2005) 'The influence of anxiety on the progression of disability', *Journal of the American Geriatrics Society*, 53 (1) pp.34-39
- Bridgwood, A. & Office for National Statistics, London (United Kingdom), Social Survey Division (2000) 'People aged 65 and over: results of an independent study carried out on behalf of the Department of Health as part of the general Household Survey', *London: Office for National Statistics*.
- Bright, R. (1997) '*Wholeness in Later Life*', London: Jessica Kingsley Publishers.
- Brocklesby, R. (1749) '*Reflections on the Power of Music*', London: M. Cooper
- Brod, M.S., & R.I. Feinbloom (1990) 'Feasibility and efficacy of verbal consents', *Research on aging*, 12 (3), pp. 364-372

- Brown, C.J., A.C.N. Chen & S.F. Sworkin (1989) 'Music in the control of human pain', *Music Therapy* 8 (1) pp. 47-60
- Brown, G. & G.C. Brown (2008) *The Living End: The Future of Death, Aging, and Immortality*, Basingstoke: Palgrave Macmillan
- Bryant, C., H. Jackson & D. Ames (2008) 'The prevalence of anxiety in older adults: methodological issues and a review of the literature', *Journal of Affective Disorders*, 109 (3) pp.233-250
- Bryman, A. (2008) 'Why do researchers integrate/combine/mesh/blend/mix/merge/fuse quantitative and qualitative research?' *Advances in mixed methods research*, pp 87-100
- Buffum, M.D., E. Hutt, V.T. Chang, M.H. Craine & A.L. Snow (2007) 'Cognitive impairment and pain management: Review of issues and challenges', *Journal of Rehabilitation Research and Development*, 44 (2) pp.315-330
- Bunt, L. (1996) *Music Therapy: An Art Beyond Words*, New York: Routledge
- Burack, O.R., P. Jefferson & L.S. Libow (2003) 'Individualized music: a route to improving the quality of life for long-term care residents', *Activities, Adaptation & Aging*, 27 (1) pp.63-76
- Burgess, E.W. (1960) *Aging in Western Societies*, Chicago: University of Chicago Press
- Burns, J.L., E. Labbé, B. Arke, K. Capeless, B. Cooksey, A. Steadman & C. Gonzales (2002) 'The effects of different types of music on perceived and physiological measures of stress', *Journal of Music Therapy*, 39 (2) pp.101-116
- Butler, R.O. (2010) *The Longevity Prescription: the 8 Proven Keys to a Long, Healthy Life*, New York: Penguin
- Bygren, L.O., B.B. Konlaan & S.E. Johansson (1996) 'Attendance at cultural events, reading books or periodicals, and making music or singing in a choir as determinants for survival: Swedish interview survey of living conditions', *British Medical Journal*, 313 pp.1577-1580
- Cacioppo, J.T., L.C. Hawkley, L.E. Crawford, J.M. Ernst, M.H. Burleson, R.B. Kowalewski, W.B. Malarkey, E. Van Cauter & G.G. Berntson (2002) 'Loneliness and health: Potential mechanisms', *Psychosomatic Medicine*, 64 (3) pp.407-417
- Campbell, D. (1991) *Music: Physician for Times to Come*, Wheaton III: Quest Books.
- Campbell, A.J. & D.M. Buchner (1997) 'Unstable disability and the fluctuations of frailty', *Age and Ageing*, 26 (4) pp.315-318
- Campbell, L.C., D.J. Clauw & F.J. Keefe (2003) 'Persistent pain and depression: a biopsychosocial perspective', *Biological Psychiatry*, 54 (3) pp.399-409

- Care Quality Commission. (2010) '*Standards for Care Homes*', Available at: (<http://cqc.org.uk/public/what-are-standards/standards/standards-care-homes>), (accessed: 22 November 2014)
- Casten, R.J., P.A. Parmelee, M.H. Kleban, M. Powell Lawton & I.R. Katz (1995) 'The relationships among anxiety, depression, and pain in a geriatric institutionalized', *Pain*, 61 (2) pp. 271-276
- Castillo-Pérez, S., V. Gómez-Pérez, M.C. Velasco, E. Pérez-Campos & M. Mayoral (2010) 'Effects of music therapy on depression compared with psychotherapy', *The Arts in Psychotherapy*, 37 (5) pp.387-390
- Cattan, M., M. White, J. Bond & A. Learmouth (2005) 'Preventing social and loneliness among older people: a systematic review of health promotion interventions', *Ageing and Society*, 25 (01), pp.41-67
- Cepeda, M.S., D.B. Carr & J.A.H. Lan (2006) 'Music for pain relief', *Cochrane Database Systematic Review*, (2)
- Cepeda, M.S., D.B. Carr, J. Lau, J. & H. Alvarez (2013) 'Music for pain relief', *Cochrane Database Systematic Review*, (10)
- Chamorro-Premuzic, T., V. Swami & B. Cermakova, B. (2010) 'Individual differences in music consumption are predicted by uses of music and age rather than emotional intelligence, neuroticism, extraversion or openness', *Psychology of Music*, 40, pp. 285-300
- Chan, M.F., E.A. Chan, E. Mok & F.Y. Kwan Tse (2009) 'Effect of music on depression levels and physiological responses in community-based older adults', *International Journal of Mental Health Nursing*, 18 (4) pp.285-294
- Chan, M.F., Z.Y. Wong & N. Thayala (2011) 'The effectiveness of music listening in reducing depressive symptoms in adults: a systematic review', *Complementary Therapies in Medicine*, 19 (6) pp.332-348
- Chan, M.F., Z.Y. Wong, H. Onishi & N.V. Thayala (2012) 'Effects of music on depression in older people: a randomised controlled trial', *Journal of Clinical Nursing*, 21 (5-6) pp.776-783
- Chapman, C.R. (2004) 'Pain perception, affective mechanisms, and conscious experience', in Hadjistavropoulos, T. & Craig, K.D. (eds.), '*Pain: psychological perspectives*', New Jersey: Lawrence Erlbaum Associates
- Chen, P., G. Ratcliff, S.H. Belle, J.A. Cauley, S.T. DeKosky & M. Ganguli (2001) 'Patterns of cognitive decline in presymptomatic alzheimer disease: a prospective community study', *Archives of General Psychiatry*, 58 (9) pp.853-858
- Cheng, S.T., H. Fung & A. Chan (2007) 'Maintaining self-rated health through social comparison in old age', *The Journals of Gerontology: series B*, 62 (5) pp.277-285

- Chibnall, J.T. & R.C. Tait (1994) 'The pain disability index: factor structure and normative data' *Archives of Physical Medicine and Rehabilitation*, 75 (10) pp.1082-1086
- Chlan, L. & A. Heiderscheit (2009) 'A tool for music preference assessment in critically ill patients receiving mechanical ventilatory support', *Music Therapy Perspectives*, 27 (1) pp.42-47
- Clair, A.A. (1996) *'Therapeutic Uses of Music with Older Adults'*, US: Health Professions Press.
- Clark, M., G. Isaacks-Downton, N. Wells, S. Redlin-Frazier, C. Eck, J.T. Hepworth & B. Chakravarthy, (2006) 'Use of preferred music to reduce emotional distress and symptom activity during radiation therapy', *Journal of Music Therapy*, 43 (3) pp.247-265
- Coffman, D.D. (2002) 'Music and quality of life in older adults', *Psychomusicology: A Journal of Research in Music Cognition*, 18 (1-2) pp.76-88
- Cohen, A., B. Bailey & T. Nilsson (2002) 'The importance of music to seniors', *Psychomusicology: Music, Mind & Brain*, 18 (1) pp.89-102
- Conrad, C. (2010) 'Music for healing: from magic to medicine', *The Lancet*, (9757) pp.1980-1981
- Cooke, M., W. Moyle, D. Shum, S. Harrison & J. Murfield (2010) 'A randomized controlled trial exploring the effect of music on quality of life and depression in older people with dementia', *Journal of Health Psychology*, 15(5) pp.765-776
- Craig, K.D., (1989). 'Emotional aspects of pain', in P.D. Wall and R. Melzack (eds.) *Textbook of Pain*, New York: Churchill Livingstone
- Craig, K.D. (2004) 'Social communication of pain enhances protective functions: a comment on Deyo, Prkachin and Mercer', *Pain*. 107 (1) pp.5-6
- Craik, F.I. (1994) 'Memory changes in normal aging', *Current directions in psychological science*, 3 (5) pp 155-158
- Croft, P., K. Jordan & C. Jinks (2005) "'Pain elsewhere" and the impact of knee pain in older people', *Arthritis & Rheumatism*, 52 (8) pp. 2350-2354
- Crombez, G., J.W. Vlaeyen, P.H. Heuts & R. Lysens (1999) 'Pain-related fear is more disabling than pain itself: evidence on the role of pain-related fear in chronic back pain disability', *Pain*, 80 (1) pp.329-339
- Crystal, H.A., E. Grober & D. Masur (1989) 'Preservation of musical memory in Alzheimer's disease', *Journal of Neurology, Neurosurgery & Psychiatry*, 52 (12) pp.1415-1416
- Cuijpers, P. & F. Smit, F (2002) 'Excess mortality in depression: a meta-analysis of community studies', *Journal of Affective Disorders*, 72 (3) pp.227-236

- Cutler, D. (2009) *'Ageing artfully: older people and professional participatory arts in the UK'*, London: The Baring Foundation
- D'Arcy, Y. (2009) 'Be in the know about pain management', *The Nurse Practitioner*, 34 (4) pp.43-47
- Davidhizar, R. & J. Giger (2004) 'A review of the literature on care of clients in pain who are culturally diverse', *International Nursing Review*, 51 (1) pp.47-55
- Davies, J.B. & J.B. Davies (1978) *'The Psychology of Music'*, London: Hutchinson
- Davis, W.B. & M.H. Thaut (1989) 'The influence of preferred relaxing music on measures of state anxiety, relaxation, and physiological responses', *Journal of Music Therapy*, 26 (4) pp.168-187
- Daykin, N. (2012) 'Developing social models for research and practice in music, arts, and health: a case study of research in a mental health setting', in MacDonald, R., Kreutz, G. & Mitchell, L. (eds.), Oxford: OUP, pp.65-75
- De Beurs, E., A.T.F. Beekman, A.J.L.M. Van Balkom, D.J.H. Deeg, R. van Dyck & W/ van Tilburg (1999) 'Consequences of anxiety in older persons: Its effect on disability, well-being and use of health services', *Psychological Medicine*, 29 (03) pp.583-593
- De Beurs, E., A.T.F. Beekman, D.J.H. Deeg, R. Van Dyck W. Van Tilburg (2000) 'Predictors of change in anxiety symptoms of older persons: results from the Longitudinal Aging Study Amsterdam,' *Psychological Medicine*. 30 (3) pp.515-527
- De Jong Gierveld, J. (1998) 'A review of loneliness: concept and definitions, determinants and consequences', *Reviews in Clinical Gerontology*, 8 pp 73-80
- Dean, A. & N. Lin (1977) 'The stress-buffering role of social support: Problems and prospects for systematic investigation', *The Journal of Nervous and Mental Disease*, 165 (6) pp.403-417
- Degmečić, D., I. Požgain & P. Filaković (2005) 'Music as therapy', *International Review of the Aesthetics and Sociology of Music*, 36 (2) pp.287-300
- Delgado, G. (5th March, 2012) 'Social Isolation'. *Aging Today*
- Demakakos, P., S. Nunn & J. Nazroo (2006) 'Loneliness, relative deprivation and life satisfaction', *Retirement, Health and Relationships of the Older Population in England*, pp.297-383
- Dennis, R., S. Boddington & N. Funnell (2007) 'Self-report measures of anxiety: are they suitable for older adults?', *Aging & Mental Health*, 11 (6) pp.668-677

- Department of Health (2010) 'A Vision for Adult Social Care: Capable Communities and Active Citizens', Available at:
(<http://webarchive.nationalarchives.gov.uk/20120511004042/http://endoflifecareforadults.nhs.uk/publications/a-vision-for-adult-social-care>), (accessed: 22 October 2014)
- Devlin, H. (17 February, 2014) 'Loneliness in old age 'deadlier than obesity'' *The Times*
- Devor, M. no date, 'About Pain', EFIC, Available at
(<http://www.efic.org/index.asp?sub=OEIX4QVHa073B4>), (accessed: 18 Jan 2013)
- di Carlo, N.S. & I. Guaitella, I. (2004) 'Facial expressions of emotion in speech and singing', *Semiotica-La Haye then Berlin*, 149 pp.37-56
- Diefenbach, G.J., D.F. Tolin, S.A. Meunier & C.M. Gilliam (2009) 'Assessment of anxiety in older home care recipients', *The Gerontologist*, 49 (2) pp.141-153
- Dileo, C. & J. Bradt (2009) 'On creating the discipline, profession, and evidence in the field of arts and healthcare', *Arts and Health: An International Journal of Research, Policy and Practice*, 1 (2) pp.168-182
- Dobriansky, P., R.M. Suzman & R.J. Hodes (2007) 'Why Population Matters', *A Global Perspective*, Available at: (<http://www.nia.nih.gov/research/publication/why-population-aging-matters-global-perspective>), (accessed 12 September 2014)
- Donald, I. & C. Foy (2004) 'A longitudinal study of joint pain in older people,' *Rheumatology*, 43 (10) pp.1256-1260
- Donaldson, L., (2008) '150 years of the annual report of the Chief Medical Officer; pain: breaking through the barrier', Department of Health, London, UK, Available at:
(https://www.webarchive.nationalarchives.gov.uk/.../dh_09623), (accessed 10 March 2014)
- Donnelly, L. (1st August, 2014) 'No rise in number of care homes despite surge in elderly population', *The Telegraph*, Available at:
(<http://www.telegraph.co.uk/health/healthnews/11005945/No-rise-in-numbers-in-care-homes-despite-surge-in-elderly-population.html>), (accessed 6 October 2014)
- Draper, B.M. (2000b) 'The effectiveness of the treatment of depression in the physically ill elderly', *Aging & Mental Health*, 4 (1) pp.9-20
- Dube, L. & J. Le Bel (2003) 'The content and structure of laypeople's concept of pleasure' *Cognition & Emotion*, 17 (2) pp.263-295
- Edwards, C.L., R.B. Fillingim & F. Keefe (2001) 'Race, ethnicity and pain', *Pain*, 94 (2) pp.133-137
- Edwards, J. (2004) Can music therapy in medical contexts ever be evidence based? *Music Therapy Today*, 5 (4)

- Edwards, J. (2005) 'Possibilities and problems for evidence-based practice in music therapy', *The Arts in Psychotherapy*, 32 (4) pp.293-301
- Egermann, H., M.E.Sutherland, O. Grewe, F. Nagel & E. Altenmuller (2011) 'The influences of a group setting on the experience of music: a physiological and psychological perspective on emotion', *Musicae Scientiae*, 15 pp.307-323
- Else, L. & J. Sloboda (2003) 'Show me emotion', *New Scientist*, (2423) pp.38-39
- Espinoza, R. & A. Kaufmann (2014) 'Diagnosis and treatment of late-life depression', *Psychiatric Times*. 31 (10)
- ESRC magazine (2013) *Britain in 2011, Opinion: living longer still seen as a problem - Part 2*, Available at: (<http://www.esrc.ac.uk/news-and-events/features-casestudies/features/continued/Living-longer-seen-as-problem-2.aspx>), (accessed: 7 July 2013)
- Evans, D. (2002a) 'The effectiveness of music as an intervention for hospital patients: a systematic review', *Journal of Advanced Nursing*, 37(1) pp.8-18
- Evans, D. (2002b) 'Hierarchy of evidence: a framework for ranking evidence evaluating healthcare interventions.' *Journal of Clinical Nursing*, 12 (1) pp.77-84
- Fancourt, D., A. Ockelford & A. Belai (2014) 'The psychoneuroimmunological effects of music: a systematic review and a new model', *Brain, Behavior, and Immunity*, 36 pp.15-26
- Fearon, I., P. McGrath & H. Achat (1996) "'Booboos": The study of everyday pain among young children', *Pain*. 68 (1) pp.55-56
- Feldt, K.S.; M.A. Warne, M.B. Ryden (1998) 'Examining pain in aggressive cognitively impaired older adults', *Journal of Gerontological Nursing*, 24 (11) pp 14-22
- Ferreira, V. & A. Sherman (2007) 'The relationship of optimism, pain and social support to well-being in older adults with osteoarthritis', *Aging and Mental Health*, 11 (1) pp.89-98
- Ferrell, B.A., B.R. Ferrell & D. Osterweil (1990) 'Pain in the nursing home', *Journal of the American Geriatrics Society*, 38 (4) pp. 409-414
- Ferrell, B.A. (1991) 'Pain management in elderly people', *Journal of the American Geriatrics Society*, 39 (1) pp. 64-73
- Ferrell, B.A. (1995) 'Pain evaluation and management in the nursing home', *Annals of Internal Medicine*, 123 (9) pp.681-687
- Finlay, K.A. (2014) 'Music-induced analgesia in chronic pain: efficacy and assessment through a primary-task paradigm', *Psychology of Music*, 42 (3) pp.325-346

- Finlay, K.A. & J. Rogers (2014) 'Maximizing self-care through familiarity: the role of practice effects in enhancing music listening and progressive muscle relaxation for pain management', *Psychology of Music*, 0305735613513311
- Finnäs, L. (1989) 'How can musical preferences be modified? A research review', *Bulletin of the Council for Research in Music Education*, 102 pp.1-58
- Fishbain, D.A., R. Cutler, H.L. Rosomoff & R.S. Rosomoff (1997) 'Chronic pain-associated depression: antecedent or consequence of chronic pain? A review', *The Clinical Journal of Pain*, 13 (2) pp.116-137
- Flowers, P.J. & J.W. Murphy (2001) 'Talking about music: interviews with older adults about their music education, preferences, activities, and reflections', *Update: Applications of Research in Music Education*, 20 (1) pp. 26-32
- Folkman, S. & J.T. Moskowitz (2000) 'Positive affect and the other side of coping', *American Psychologist*, 55 (6) pp.647-654
- Fredrickson, B.L. (2000) 'Extracting meaning from past affective experiences: the importance of peaks, ends, and specific emotions', *Cognition & Emotion*, 14 (4) pp.577-606
- Fredrickson, B.L. (2001) 'The role of positive emotions in positive psychology: the broaden-and-build theory of positive emotions', *American Psychologist*, 56 (3) pp.218-226
- Fredrickson, B.L. (2003) 'The value of positive emotions', *American Scientist*, 91 (4) pp.330-335
- Fredrickson, B. (2004) 'The broaden-and-build theory of positive emotions', *Philosophical Transactions of the Royal Society of London Series B: Biological Sciences*, 359 (1449) pp.1367-1377
- Fredrickson, B.L. & C. Branigan (2005) 'Positive emotions broaden the scope of attention and thought-action repertoires', *Cognition & Emotion*, 19 (3) pp.313-332
- Friedberg, J.P., S.R. Lipsitz & S. Natarajan (2010) 'Challenges and recommendations for blinding in behavioral interventions illustrated using a case study of a behavioral intervention to lower blood pressure', *Patient Education and Counseling*, 78 (1) pp.5-11
- Gabrielsson, A. & E. Lindström (1995) 'Emotional expression in synthesizer and sentograph performance', *Psychomusicology: Music, Mind & Brain*, 14 (1) pp.94-116
- Gabrielsson, A. (2001) 'Emotions in strong experiences with music', in Juslin, P.J., J.A.Sloboda, (eds.) *Music and Emotion: theory and research*. New York, Oxford University Press
- Gabrielsson, A. (2002) 'Old people's remembrance of strong experiences related to music', *Psychomusicology, A Journal of Research in Music Cognition*, 18 (1-2) pp.103-122
- Gagliese, L. & R. Melzack (1997) 'Chronic pain in elderly people', *Pain*, 70 (1) pp.3-14

- Gagliese, L. (2009) 'Pain and aging: the emergence of a new subfield of pain research', *The Journal of Pain*, 10 (4) pp.343-353
- Garner, J. & M. Arden (1998) 'Editorial reflections on old age', *Aging and Mental Health*, 2 (2) pp. 92-93
- Garza-Villarreal, E.A., A.D. Wilson, L. Vase, E. Brattico, F.A. Barrios, T. Jensen, J.I. Romero-Romo & P. Vuust (2014) 'Music reduces pain and increases functional mobility in fibromyalgia', *Frontiers in Psychology*, 5 (90) pp.1-10
- Geerlings, S.W., J.W. Twisk, A.T. Beekman, D.J. Deeg & W. van Tilburg (2002) 'Longitudinal relationship between pain and depression in older adults: sex, age and physical disability', *Social Psychiatry and Psychiatric Epidemiology*, 37 (1) pp.23-30
- Gerdner, L.A. (2000) 'Effects of individualized versus classical "relaxation" music on the frequency of agitation in elderly persons with Alzheimer's disease and related disorders', *International Psychogeriatrics*, 12 (01) pp.49-65
- Gibson, S.J. & R.D. Helme (2001) 'Age-related differences in pain perception and report', *Clinics in Geriatric Medicine*, 17 (3) pp.433-456
- Giger, J.N. & R.E. Davidhizar (1999) 'The Giger and Davidhizar transcultural assessment model', *Journal of Transcultural Nursing*, 13 (3) pp. 185-188 (3rd)
- Gilchrist, I. (29th December, 2002) 'My music helps healing', Available at: (<http://www.news.bbc.co.uk/1/hi/health/2385315>), (accessed 20 October 2012)
- Giles, L.C., G.F. Glonek, M.A. Luszcz & G.R. Andrews (2005) 'Effect of social networks on 10 year survival in very old Australians: the Australian Longitudinal Study of Aging', *Journal of Epidemiology and Community Health*, 59 (7) pp.574-579
- Gilleard, C. & P. Higgs (2010) 'Aging without agency: theorizing the Fourth Age', *Aging & Mental Health*, 14(2) pp.121-128
- Gold, A. & A. Clare (2013) 'An exploration of music listening in chronic pain', *Psychology of Music*, 41 (5) pp.545-564
- Goodall, D. & L. Etters (2005) 'The therapeutic use of music on agitated behavior in those with dementia', *Holistic Nursing Practice*, 19 (6) pp.258-262
- Greasley, A.E. & A.M. Lamont (2006) 'Music preference in adulthood: why do we like the music we do', Presented at the 9th International Conference on Music Perception and Cognition. pp. 960-966
- Grewe, O., R. Kopiez & E. Altenmüller (2009) 'Chills as an indicator of individual emotional peaks', *Annals of the New York Academy of Sciences*, 1169 (1) pp.351-354

- Grewe, O., F. Nagel, R. Kopiez & E. Altenmüller (2007) 'Emotions over time: synchronicity and development of subjective, physiological, and facial affective reactions to music', *Emotion*, 7(4) pp. 774-788
- Groen, K.M. (2007) 'Pain assessment and management in end of life care: a survey of assessment and treatment practices of hospice music therapy and nursing professionals', *Journal of Music Therapy*, 44 (2) pp 90-112
- Gross, R.T. & F.L. Collins (1981) 'On the relationship between anxiety and pain: a methodological confounding', *Clinical Psychology Review*, 1 (3) pp.375–386
- Gudmannsdóttir, G.D. & S. Halldórsdóttir (2009) 'Primacy of existential pain and suffering in residents in chronic pain in nursing homes: a phenomenological study' *Scandinavian Journal of Caring Sciences*, 23 (2) pp.317-327
- Gueldner, S.H. & M.B. Manner (1989) Methodological issues related to gerontological nursing research', *Nursing Research*, 38 (3) pp.183-185
- Gueldner, S.H., S. Loeb, D. Morris, J. Penrod, M. Bramlett, L. Johnston & P. Schlotzhauer (2001) 'A comparison of life satisfaction and mood in nursing home residents and community-dwelling elders', *Archives of Psychiatric Nursing*, 15 (5) pp.232-240
- Guétin, S., F. Portet, M.C. Picot, C. Pommie, M. Messaoudi, L. Djabelkir, A.L.Olsen, M.M. Cano, E. Lecourt & J. Touchon (2009) 'Effect of music therapy on anxiety and depression in patients with alzheimer's type dementia: randomised, controlled study', *Dementia and Geriatric Cognitive Disorders*, 28 (1) pp.36-46
- Guétin, S., P. Ginies, D.K. Siou, M.C. Picot, C. Pommie, E. Guldner, A..M. Gosp, E. Coudeyre & J. Touchon (2011) 'The effects of music intervention in the management of chronic pain: a single-blind, randomised, controlled trial', *Clinical Journal of Pain*, 28 (4) pp.329-337
- Gurland, B.J., D.E.Wilder & C. Berkman (1988) 'Depression and disability in the elderly: reciprocal relations and changes with age', *International Journal of Geriatric Psychiatry*, 3 (3) pp.163-179
- Guzzetta, C.E. (1989) 'Effects of relaxation and music therapy in a coronary care unit with presumptive acute myocardial infarction', *Heart Lung*, 18 pp.609-616
- Hadjistavropoulos, T. & Craig, K.D. (eds.) (2004) *Pain: Psychological Perspectives*, New Jersey: Lawrence Erlbaum Associates
- Halperin, S. & O. Heath (2012) '*Political Research. Methods and Practical Skills*', Oxford: Oxford University Press
- Hanlon, J.T., R.M. Boudreau, Y.F. Roumani, A.B. Newman, C.M. Ruby, R.M. Wright, S.N. Hilmer, R.I. Shorr, D.C.Bauer, E.M. Simonsick & S.A. Studenski (2009) 'Number and dosage of

central nervous system medications on recurrent falls in community elders: the health, aging and body composition study', *The Journals of Gerontology. Series A, Biological Sciences and Medical Sciences*, 64 (4) pp.492-498

Hanser, S.B. (1985) 'Music therapy and stress reduction research', *Journal of Music Therapy*, 22 (4) pp.193-206

Hanser, S.B. (1988) 'Controversy in music listening/stress reduction research', *The Arts in Psychotherapy*, 15 (3) pp.211-217

Hanser, S.B. (1990) 'A music therapy strategy for depressed older adults in the community', *Journal of Applied Gerontology*, 9 (3) pp.283-298

Hanser, S.B. & L.W.Thompson (1994) 'Effects of a music therapy strategy on depressed older adults', *Journal of Gerontology*, 49 (6) pp.265-269

Hanser, S. (2010) 'Music, health, and well-being', in Juslin, P.N., J.A. Sloboda, (eds.) *Handbook of Music and Emotion: Theory, Research, Applications*, Oxford: Oxford University Press, pp.849-877

Harding, E., (26 May, 2014) 'Government 'tsar' for the elderly is passionate campaigner on age issues', *Daily Mail*.

Hargreaves, D.J. & A.C. North (1997) *The Social Psychology of Music*. Oxford: Oxford University Press

Harries, E. & de Las Casas, L. (2013) *Who Will Love Me, when I'm 64?* New Philanthropy Capital; Relate

Hawker, G.A., S. Mian, S., T. Kendzerska & M. French (2011) 'Measures of adult pain: Visual Analog Scale for Pain (VAS pain), Numeric Rating Scale for pain (NRS pain), McGill pain questionnaire (MPQ), short-form McGill Pain Questionnaire (SF-MPQ), Chronic Pain Grade Scale (CPQS), Short Form-36 Bodily Pain Scale (SF-36 BPS), and measure of intermittent and constant osteoarthritis pain (ICOAP)', *Arthritis Care & Research*, 63 (S11) pp.S240-S252

Hawkey, L.C. & Cacioppo, J.T. (2003) 'Loneliness and pathways to disease', *Brain, Behavior, and Immunity*, 17 (1) pp.98-105

Hawkey, L.C. & J.T. Cacioppo (2007) 'Aging and loneliness downhill quickly?', *Current Directions in Psychological Science*, 16 (4) pp.187-191

Hawkey, L.C. & J.T. Cacioppo (2010) 'Loneliness matters: a theoretical and empirical review of consequences and mechanisms', *Annals of Behavioral Medicine*, 40 (2) pp.218-227

Haynes, R.B. (2002) 'What kind of evidence is it that evidence-based medicine advocates want health care providers and consumers to pay attention to?', *BMC Health Services Research* 2 p.3

- Hays, T., R. Bright & V. Minichiello (2002) 'The contribution of music to positive aging: a review', *Journal of Aging and Identity*, 7(3) pp.165-175
- Hays, T. & V. Minichiello (2005) 'The meaning of music in the lives of older people: a qualitative study', *Psychology of Music*, 33 (4) pp.437-451
- Helme, R.D. (2001) 'Chronic pain management in older people', *European Journal of Pain*, 5 (SA) pp.31-36
- Helme, R.D. & S.J. Gibson (2001) 'The epidemiology of pain in elderly people', *Clinics in Geriatric Medicine*, 17 (3) pp.417-431
- Helsing, M. (2012) 'Everyday music listening: the importance of individual and situational factors for musical emotions and stress reduction', *PhD Thesis, University of Gothenburg*
- Herr, K.A. & P.R. Mobily (1991) 'Complexities of pain assessment in the elderly: clinical considerations', *Journal of Gerontological Nursing*, 17 (4) pp.12-19
- Herr, K.A. & P.R. Mobily (1993) 'Comparison of selected pain assessment tools for use with the elderly', *Applied Nursing Research*, 6 (1) pp.39-46
- Herr, K.A. & L. Garand (2001) 'Assessment and measurement of pain in older adults', *Clinical Geriatric Medicine*, 17 (3) pp.457-478
- Herr, K., K.F. Spratt, L. Garand & L. Li (2007) 'Evaluation of the iowa pain thermometer and other selected pain intensity scales in younger and older adult cohorts using controlled clinical pain: a preliminary study', *Pain Medicine*, 8 (7) pp.585-600
- Herr, K. (2011) 'Pain assessment strategies in older patients', *The Journal of Pain*, 12 (3) pp.S3-S13
- Her, L., Yeager, C.A. & C.V. Scott (2011) 'Late-life psychotherapy: challenges and opportunities to enhance well-being in the oldest old', in Poon, L., W. & J. Cohen-Mansfield (eds.) *Understanding well-being in the oldest old*, Cambridge: Cambridge University Press
- Higgs, P & I.R. Jones (2009) '*Medical sociology and old age: towards a sociology of health in later life*', Abingdon: Routledge
- Horgas, A.L., A.L. Nichols, C.A. Schapson & K. Vietes (2007) 'Assessing pain in persons with dementia: relationships among the non-communicative patient's pain assessment instrument, self-report, and behavioral observations', *Pain Management Nursing*, 8(2) pp.77-85
- Hunter, D. (2012) 'Loneliness, a public health issue', *Perspectives in Public Health*, 132 (4) p.153

- Hussain, R., R. Marino & I. Coulson (2005) 'The role of health promotion in healthy ageing' in Minichiello, V. & I. Coulson (eds.) *Contemporary issues in gerontology: promoting positive ageing*, London: Routledge
- Hyer, L., C.A. Yeager & C.V. Scott (2011a) 'Late-life psychotherapy: challenges and opportunities to enhance well-being in the oldest old' in Poon, L.W. & J. Cohen-Mansfield (eds.) *Understanding Well-being in the Oldest Old*, Cambridge: Cambridge University Press
- Hyer, L., C. Scott & C. Yeager (2011b) 'Effects of a holistic memory clinic for older adults', *Aging and mental health*, 18 (2) pp. 169-178
- IHA (2014) *The Institute of Healthy Ageing*, Available at: (<http://www.ucl.ac.uk/iha>), (accessed 3 October 2014)
- Iwanaga, M. & Y. Moroki (1999) 'Subjective and physiological responses to music stimuli controlled over activity and preference', *Journal of Music Therapy*, 36 (1) pp.26-38
- Jakobsson, U. & I.R. Hallberg (2002) 'Pain and quality of life among older people with rheumatoid arthritis and/or osteoarthritis: a literature review', *Journal of Clinical Nursing*, 11 (4) pp.430-443
- Jamieson, S. (2004) 'Likert scales: how to (ab) use them', *Medical Education*, 38 (12) pp.1217-1218
- Jamison, R, N. (2011) 'Assessment and treatment of abuse risk in opioid prescribing for chronic pain', *Pain Research and Treatment*, 2011, Article IS 941808
- Janata, P. (2012) 'Effects of widespread and frequent personalized music programming on agitation and depression in assisted living facility residents with Alzheimer-type dementia', *Music and Medicine*, 4 (1) pp.8-15
- Janelli, L., G. Kanski & K. Wu (2004/2005) 'The influence of individualised music on patients in physical restraints: a pilot study', *Journal of New York State Nurses Association*, 35 (2) pp.22-27
- Jongenelis, K., A.M. Pot, A.M., Eisses, A.T. Beekman, H. Kluiter, W. van Tilburg, & M.W. Ribbe, (2003) 'Depression among older nursing home patients: a review. *Tijdschrift Voor Gerontologie en Geriatrie*, 34 (2) pp.52-59
- Jongenelis, K., A. Pot, A. Eisses, A. Beekman, H. Kluiter & M. Ribbe (2004) 'Prevalence and risk indicators of depression in elderly nursing home patients: the AGED study', *Journal of Affective Disorders*, 83 (2) pp.135-142
- Juarez, G., B. Ferrell & T. Borneman, T. (1998) 'Influence of culture on cancer pain management in Hispanic patients', *Cancer Practice*, 6 (5) pp.262-269

- Juslin, P.N. & P. Laukka, P. (2004) 'Expression, perception, and induction of musical emotions: a review and a questionnaire study of everyday listening', *Journal of New Music Research*, 33 (3) pp.217-238
- Juslin, P.N., S. Liljeström, D. Västfjäll, G. Barradas & A. Silva (2008) 'An experience sampling study of emotional reactions to music: listener, music, and situation,' *Emotion*, 8 (5) pp.668-683
- Juslin, P.N., S. Liljeström, P. Laukka, D. Västfjäll & L. Lundqvist (2011) 'Emotional reactions to music in a nationally representative sample of Swedish adults prevalence and causal influences', *Musicae Scientiae*, 15 (2) pp.174-207
- Karp, J.F., J. Scott, P. Houck, C.F. Reynolds, D.J. Kupfer. & E. Frank (2005) 'Pain predicts longer time to remission during treatment of recurrent depression', *Journal of Clinical Psychiatry*, 66 (5) pp. 591-597
- Karp, J.F. & C.F.Reynolds (2009) 'Depression, pain, and aging', *Focus: The Journal of Lifelong Learning in Psychiatry*, 7 (1) pp.17-27
- Katona, C. & G. Livingston (2000) 'Impact of screening old people with physical illness for depression?', *The Lancet*, 356 (9224) pp.91-92
- Katona, C., (2000) 'Managing depression and anxiety in the elderly patient', *European Neuropsychopharmacology*, 10, Supplement 4 pp.S427-S432
- Katz, M. (2004) *Capturing sound: how technology has changed music*, Berkeley: University of California Press
- Keane, J. (2008) 'Old Age without Wretchedness', *Thomas Paine's Vision of Growing Old*. Available at: (http://www.johnkeane.net/wp-content/uploads/2011/01/jk_thetfordageing_nov_2009.pdf)
- Keane, J. (2008) 'Civil society and ageing', *Nova Acta Leopoldina*, NF 99 (36X)
- Kee, J.H., E. Salerno (1995) 'Race, culture, and medications', *Journal of Emergency Nurses*, 21 (6) pp.560-562
- Kemper, K.J. & S.C. Danhauer (2005) 'Music as therapy', *Southern Medical Journal*, 98 (3) pp.282-288
- Kennedy, B.L., J.J. Schwab, R.L. Morris & B. Beldia (2001) 'Assessment of state and trait anxiety in subjects with anxiety and depressive disorders', *Psychiatric Quarterly*, 72 (3) pp.263-276
- Kenny, M. (10th February, 2014) 'Caring for the ill can cost you your freedom', *Daily Telegraph*
- Kivelä, S. & K. Pahkala (1991) 'Relationships between health behaviour and depression in the aged', *Aging Clinical and Experimental Research*, 3(2) pp.153-159

- Knox, D., S. Beveridge, L.A. Mitchell & R.A.R. McDonald (2011) 'Acoustic analysis and mood classification of pain-relieving music', *Journal of Acoustical Society of America*, 130 (3) pp.1673-1682
- Koenig, H.G., Meador, K.G., Cohen, H.J. & Blazer, D.G. (1988) 'Self-rated depression scales and screening for major depression in the older hospitalized patient with medical illness', *Journal of the American Geriatrics Society*, 36 (8) pp. 699-706
- Koenig, H.G., H.J. Cohen, D.G. Blazer & C. Pieper (1992) 'Religious coping and depression among elderly, hospitalized medically ill men', *The American Journal of Psychiatry*, 149 (12) pp. 1693-1700
- Kopacz, M. (2005) 'Personality and music preferences: the influence of personality traits on preferences regarding musical elements', *Journal of Music Therapy*, 42 (3) pp.216-239
- Kreutz, G., U. Ott, D. Teichmann, P. Osawa & D. Vaitl (2008) 'Using music to induce emotions: Influences of musical preference and absorption', *Psychology of Music*, 36 pp.101-126
- Kroenke, K. & R.L.Spitzer (2002) 'The PHQ-9: a new depression diagnostic and severity measure', *Psychiatric Annals*. 32 (9) pp.509-515
- Kunzmann, U., T.D. Little & J. Smith (2000) 'Is age-related stability of subjective well-being a paradox? cross-sectional and longitudinal evidence from the Berlin Aging Study', *Psychology and Aging*. 15 (3) pp.511-526
- Kwentus, J.A., Harkins, S.W., Lignon, N. & J.J. Silverman (1985) 'Current concepts of geriatric pain and its treatment', *Geriatrics*, 40 (4) pp.48-54
- Lamont, A. (2011) 'University students' strong experiences of music pleasure, engagement, and meaning' *Musicae Scientiae*, 15 (2) pp.229-249
- Landau, R. & H. Litwin (2001) 'Subjective well-being among the old-old: the role of health, personality and social support', *International Journal of Aging and Human Development*, 52 (4) pp.265-280
- Lane, D. (1996) *Music as Medicine: Deforia Lane's Life of Music, Healing, and Faith*, Michigan: Zondervan
- Laslett, P. (1991) *A Fresh Map of Life: The Emergence of the Third Age*, US: Harvard University Press
- Laukka, P. (2007) 'Uses of music and psychological well-being among the elderly', *Journal of Happiness Studies*, 8 pp. 215-241
- Laurance, J. (10 April, 2002) 'Why an ageing population is the greatest threat to society', *The Independent*.

- Lawton, M.P. (1971) 'The functional assessment of elderly people', *Journal of the American Geriatrics Society*, 19 (6) pp.465-481
- LeBlanc, A. (1982) 'An interactive theory of music preference', *Journal of Music Therapy*, 19 (1) pp.28-45
- Lenze, E.J., J.C. Rogers, L.M. Martire, B.H. Mulsant, B.L. Rollman, M.A. Dew, R. Schulz & C.F. Reynolds (2001) 'The association of late-life depression and anxiety with physical disability: a review of the literature and prospectus for future research', *The American Journal of Geriatric Psychiatry*, 9 (2) pp.113-135.
- Licht, S. (2007) *'Music in Medicine'*, Boston: New England Conservancy of Music
- Lievesley, N., G. Crosby & C. Bowman (2011) 'The changing role of care homes', *Centre for Policy on Ageing*
- Liljeström, S., P.N. Juslin & D. Västfjäll (2013) 'Experimental evidence of the roles of music choice, social context, and listener personality in emotional reactions to music', *Psychology of Music*, 41 (5) pp.579-599
- Lin, E.H., W. Katon, M. Von Korff, L. Tang, J.W. Williams Jr, K. Kroenke, E. Hunkeler, L. Harpole, M. Hegel & P. Arean (2003) 'Effect of improving depression care on pain and functional outcomes among older adults with arthritis', *The Journal of the American Medical Association*, 290 (18) pp.2428-2429
- Lingham, J. & T. Theorell (2009) 'Self-selected "favourite" stimulative and sedative music listening—how does familiar and preferred music listening affect the body?', *Nordic Journal of Music Therapy*, 18 (2) pp.150-166
- Lloyd, L. (2012) *'Health and Care in Ageing Societies: A New International Approach'*, Bristol: Policy Press
- Lloyd, L., M. Calnan, A. Cameron, J. Seymour & R. Smith (2012) 'Identity in the Fourth Age: Perseverance, adaptation and maintaining dignity', *Ageing and Society*, 34 (01) pp.1-19
- Loeser, J.D. & R. Melzack (1999) 'Pain: an overview', *The Lancet*, 353 (9164) pp.1607-1609
- Loewy, J.V. & D. Aldridge (2009) 'Music and medicine: debating evidence-based strategies and outcomes', *Music and Medicine*, 1 (2) pp.81-85
- Loewy, J.V. & R. Spintge (2011) 'Music soothes the savage breast. *Music and Medicine*, 3 (2) pp.69-71
- Logan, T.G. & A.R. Roberts (1984) 'The effects of different types of relaxation music on tension level', *Journal of Music Therapy*, 21 (4) pp.177-183

- Lonsdale, A.J. & A.C. North (2011) 'Why do we listen to music? A uses and gratifications analysis', *British Journal of Psychology*, 102 (1) pp.108-134
- MacDonald, R.A. & D. Miell (2000) 'Creativity and music education: the impact of social variables', *International Journal of Music Education*, (1) pp.58-68
- MacDonald, R.A., L.A. Mitchell, T. Dillon, M.G. Serpell, J.B. Davies & E.A. Ashley (2003) 'An empirical investigation of the anxiolytic and pain reducing effects of music', *Psychology of Music*, 31 (2) pp.187-203
- Magee, W.L. (2011) 'Music technology for health and well-being the bridge between the arts and science', *Music and Medicine*, 3 (3) pp.131-133
- Magni, E., G.B. Frisoni, R. Rozzini, D. De Leo & M. Trabucchi (1996) 'Depression and somatic symptoms in the elderly: the role of cognitive function', *International Journal of Geriatric Psychiatry*, 11 (6) pp.517-522
- Manela, M., C. Katona & G. Livingston (1996) 'How common are the anxiety disorders in old age?' *International Journal of Geriatric Psychiatry*, 11 (1) pp.65-70
- Manthorpe, J. & Iliffe, S. (2005) '*Depression in Later Life*', London: Jessica Kingsley Publishers
- Maratos, A., C. Gold, X. Wang & M. Crawford (2008) 'Music therapy for depression', *Cochrane Database Systematic Review* (1)
- Maslar, P.M. (1986) 'The effect of music on the reduction of pain: a review of the literature', *The Arts in Psychotherapy*, 13 (3) pp.215-219
- Maxwell, C.J., D.M. Dalby, M. Slater, S.B. Patten, D.B. Hogan, M. Eliaszie, J.P. & Hirdes (2008) 'The prevalence and management of current daily pain among older home care clients,' *Pain*, 138 (1) pp 208-216
- McCaffery, M. (1979) '*Nursing Management of the Patient with Pain*', Lippincott Williams & Wilkins
- McCaffery, M. & A. Beebe (1989) '*Pain Clinical Manual for Nursing Practice*', Aylesbury: Mosby
- McCaffery, M. & C. Pasero (1999) 'Pain management: problems and progress', *Pain: Clinical Manual. 2nd Ed. St. Louis, MO: Mosby*, pp.1-14
- McCaffrey, R. E. & Freeman (2003) 'Effect of music on chronic osteoarthritis pain in older people', *Journal of Advanced Nursing*, 44 (5) pp.517-524
- McCaul, K.D. & C. Haugtvedt (1982) 'Attention, distraction, and cold-pressor pain', *Journal of Personality and Social Psychology*, 43 (1) pp.154-162
- McCloskey, L.J. (1985) 'Music and the frail elderly', *Activities, Adaptation & Aging*, 7 (2) pp.73-75

- McDougall, F.A., F.E. Matthews, K. Kvaal, M.E. Dewey & C. Brayne (2007) 'Prevalence and symptomatology of depression in older people living in institutions in England and Wales', *Age and Ageing*, 36 (5) pp.562-568
- Meltzer, B., (24th June, 2013) 'Friendship and conscious community-building: secrets to a happier, longer life?' *Aging Today*
- Meltzer, C.C., M.N. Cantwell, P.J. Greer, D. Ben-Eliezer, G. Smith, G. Frank, W.H. Kaye, P.R. Houck & J.C. Price (2000) 'Does cerebral blood flow decline in healthy aging? A PET study with partial-volume correction', *Journal of Nuclear Medicine: Official Publication, Society of Nuclear Medicine*, 41 (11) pp.1842-1848
- Melzack, R. & Wall, P.D. (1965) 'Pain mechanisms: A new theory', *Science*, 150 pp.97-979
- Melzack, R. (1975) 'The McGill Pain Questionnaire: major properties and scoring methods', *Pain*, 1, pp. 277-299
- Melzack, R. (1987) 'The short-form McGill pain questionnaire', *Pain*. 30 (2) pp.191-197
- Melzack, R. (1990) 'The tragedy of needless pain', *Scientific American*, 262 (2) pp.27-33
- Melzack, R. & P.D. Wall (1996) 'Pain mechanisms: a new theory: a gate control system modulates sensory input from the skin before it evokes pain perception and response', *Pain Forum*, 5 (1) pp.3-11
- Melzack, R. (1999) 'Pain: an overview', *The Lancet*, 353 (9164) pp.1607-1609
- Melzack, R. & J. Katz (2001) 'The McGill Pain Questionnaire: appraisal and current status', in Turk, D.C., R.Melzack, (eds.) *Handbook of Pain Assessment* (2nd ed.) New York: Guilford Press
- Melzack, R. & J. Katz (2004) 'The gate control theory: reaching for the brain', in Hadjistavropoulos, T., K.D.Craig, (eds.) *Pain: Psychological Perspectives*, New Jersey: Lawrence Erlbaum Associates
- Melzack, R. (2005) 'Evolution of the neuromatrix theory of pain', the Prithvi Raj lecture presented at the third world congress of World Institute of Pain, Barcelona, *Pain Practice*, 5 (2) pp.85-94
- Melzack, R. (2012) Foreword in Quinlan Colwell, A. & d'Arcy (2012) *Compact Clinical Guide to Geriatric Pain Management: an evidence based approach for nurses*, New York: Springer Publishing Company
- Merskey, H. (1980) 'The role of the psychiatrist in the investigation and treatment of pain', *Research Publications - Association for Research in Nervous and Mental Disease*, 58 pp.249-260
- Miaskowski, C. (1996) 'Response to "the effects of music interventions on postoperative pain and sleep in coronary artery bypass graft (CABG) patients"', *Research and Theory for Nursing Practice*, 10 (2) pp.171-174

- Michalos, A. C. (2004) 'Social indicators research and health-related quality of life research', *Social Indicators Research*, 65 (1) pp. 27-72
- Miranda, D. & M. Claes, M. (2009) 'Music listening, coping, peer affiliation and depression in adolescence', *Psychology of Music*, 37 (2) pp.215-233
- Mitchell, L.A. & R.A. MacDonald (2006) 'An experimental investigation of the effects of preferred and relaxing music listening on pain perception', *Journal of Music Therapy*, 43 (4) pp.295-316
- Mitchell, L.A., R.A. MacDonald & E.E. Brodie (2006) 'A comparison of the effects of preferred music, arithmetic and humour on cold pressor pain', *European Journal of Pain*, 10 (4) pp.343-343
- Mitchell, L.A., R.A.R. MacDonald, C. Knussen & M.G. Serpell (2007) 'A survey investigation of the effects of music listening on chronic pain', *Psychology of Music*, 35 (1) pp.37-57
- Mitchell, L.A. & R.A. MacDonald (2009) 'Qualitative research on pain', *Current Opinion in Supportive and Palliative Care*, 3 (2) pp.131-135
- Mitchell, L.A. & R.A. MacDonald (2012) 'Music, Health and Wellbeing', in MacDonald, R., G. Kreutz, L. Mitchell (eds.) *Music, Health & Wellbeing*, Oxford: Oxford University Press
- Morley, S., K. Doyle & A. Beese (2000) 'Talking to others about pain: suffering in silence', *Progress in Pain Research and Management*, 16 pp.1123-1129
- Morosko, T.E. & F.F. Simmons (1966) 'The effect of audio-analgesia on pain threshold and pain tolerance', *Journal of Dental Research*, 45 (6) pp.1608-1617
- Moseley, G. (2003) 'A pain neuromatrix approach to patients with chronic pain', *Manual Therapy*, 8 (3) pp.130-140
- Mossey, J.M., E. Mutran, K. Knott & R. Craik (1989) 'Determinants of recovery 12 months after hip fracture: the importance of psychosocial factors', *American Journal of Public Health*, 79 (3) pp.279-286
- Mukai, Y. & R.R. Tampi (2009) 'Treatment of depression in the elderly: a review of the recent literature on the efficacy of single-versus dual-action antidepressants', *Clinical Therapeutics*, 31 (5) pp.945-961
- Nayak, S., S.C. Shiflett, S. Eshun & F.M. Levine (2000) 'Culture and gender effects in pain beliefs and the prediction of pain tolerance', *Cross-Cultural Research*, 34(2) pp.135-151
- Nevin, K. (1996) 'Influence of sex on pain assessment and management', *Annals of Emergency Medicine*, 27 (4) pp.424-426

- Nicholson, C., J. Meyer, M. Flatley, C. Holman & K. Lowton (2012) 'Living on the margin: understanding the experience of living and dying with frailty in old age', *Social Science & Medicine*, 75 (8) pp.1426-1432
- Nilsson, U. (2008) 'The anxiety-and pain-reducing effects of music interventions: a systematic review', *AORN Journal*, 87 (4) pp.780-807
- North, A.C., D.J. Hargreaves & S.A. O'Neill (2000) 'The importance of music to adolescents', *British Journal of Educational Psychology*, 70 (2) pp.255-272
- North, A.C., D.J. Hargreaves & J.J. Hargreaves (2004) 'Uses of music in everyday life', *Music Perception*, 22 (1) pp.41-77
- North, A. & D. Hargreaves (2008) *The Social and Applied Psychology of Music*, Oxford: Oxford University Press
- Office for National Statistics (2013) *Measuring National Well-being – older people and loneliness*. Available at: (<http://www.ons.gov.uk/ons/rel/wellbeing/measuring-national-well-being/older-people-and-loneliness/art-measuring-national-well-being--older-people-and-loneliness.html>) (accessed 4 March 2013)
- O'Neill, L. & S. Morrison (2011) 'Palliative care for older adults', in Stuart-Hamilton, I. (ed.) (1st) Cambridge: Cambridge University Press
- Opler, M.K. (1961) 'Ethnic differences in behavior and health practice', *The Family: A Focal Point for Health Education*, .New York Academy of Science, New York
- Ortiz, J. (1998) *The Tao of Music*, York Beach. MA: Samuel Weiser
- Ostir, G.V., K.S. Markides, S.A. Black & J.S. Goodwin (2000) 'Emotional well-being predicts subsequent functional independence and survival', *Journal of the American Geriatrics Society* 48 (5) pp. 473-478
- Ostir, G.V., K.S. Markides, M.K. Peek & J.S. Goodwin (2001) 'The association between emotional well-being and the incidence of stroke in older adults', *Psychosomatic Medicine* 63 (2) pp.210-215
- Ostir, G.V., K.J. Ottenbacher & K.S. Markides (2004) 'Onset of frailty in older adults and the protective role of positive affect', *Psychology and Aging*, 19 (3) pp.402-408
- Otte, C., S. Hart, T. C. Neylan, C.R. Marmar, K. Yaffe & D.C. Mohr (2005) 'A meta-analysis of cortisol response to challenge in human aging: importance of gender. *Psychoneuroendocrinology*, 30 (1), pp.80-91
- Panksepp, J. (1995) 'The emotional sources of "chills" induced by music', *Music Perception*, 13 (2) pp.171-207

- Paykel, E.S., T. Brugha & T. Fryers (2005) 'Size and burden of depressive disorders in Europe', *European Neuropsychopharmacology*, 15 (4) pp.411-423
- Peat, J., C. Mellis, K. Williams & W. Xuan (2002) '*Health Science Research: A handbook of quantitative methods*', London: Sage
- Peck, D.J. (2002) '*Or Perish in the Attempt: Wilderness Medicine in the Lewis & Clark Expedition*', US: Farcountry Press
- Pelletier, C.L. (2004) 'The effect of music on decreasing arousal due to stress: a meta-analysis', *Journal of Music Therapy*, 41 (3) pp.192-214
- Pinquart, M. (2001) 'Correlates of subjective health in older adults: a meta-analysis', *Psychology and Aging*, 16 (3) pp 414-426
- Poon, L.W. & J. Cohen-Mansfield (2011) '*Understanding Well-being in the Oldest Old*', Cambridge: Cambridge University Press
- Poppi, 2013, '*Projecting older people population information*', Available at: (<http://www.poppi.org.uk>), (accessed: 5 June 2013)
- Preble, L. M., J.A. Guveyan & R.S. Sinatra (1992) 'Patient characteristics influencing postoperative pain management' in *acute pain: mechanisms and management*, St. Louis, MO: Mosby-Year Book
- Prensner, J.D., C.J. Yowler, L.F. Smith, A.L. Steele & R.B. Fratianne (2001) 'Music therapy for assistance with pain and anxiety management in burn treatment', *Journal of Burn Care & Research*, 22 (1) pp.83-88
- Pressman, S.D., S. Cohen, G.E. Miller, A. Barkin, B.S. Rabin & J.J. Treanor (2005) 'Loneliness, social network size, and immune response to influenza vaccination in college freshmen', *Health Psychology*, 24 (3) pp.297-306
- Punkanen, M., T. Eerola & J. Erkkilä (2011) 'Biased emotional preferences in depression: decreased liking of angry and energetic music by depressed patients', *Music and Medicine*, 3 (2) pp.114-120
- Quinlan-Colwell, A. & Y. d'Arcy (2012) '*The Compact Clinical Guide to Geriatric Pain Management: an Evidence-Based Approach for Nurses*', New York: Springer Publishing Company
- Radloff, L.S. (1977) 'The CES-D scale a self-report depression scale for research in the general population', *Applied Psychological Measurement*, 1 (3) pp.385-401
- Rentfrow, P.J. & S.D. Gosling (2003) 'The do re mi's of everyday life: the structure and personality correlates of music preferences', *Journal of Personality and Social Psychology*, 84 (6) pp.1236-1256

- Reynolds, K.S., L.C. Hanson, R.F. DeVellis, M. Henderson & K.E. Steinhauser (2008) 'Disparities in pain management between cognitively intact and cognitively impaired nursing home residents', *Journal of Pain and Symptom Management*, 35 (4) pp.388-396
- Rickard, N.S. (2004) 'Intense emotional responses to music: a test of the physiological arousal hypothesis', *Psychology of Music*, 32 (4) pp.371-388
- Robb, S.L., D.S. Burns & J.S. Carpenter (2011) 'Reporting guidelines for music-based interventions', *Music and Medicine*, 3 (4) pp.271-279
- Robinson, M.E. & J.L. Riley (1998) 'Models of chronic pain', in Block, A.R., E.F. Kemer & E. Fernandez (eds.) *'Handbook of Chronic Pain Syndromes'*, New York: Lawrence Erlbaum
- Rodgers, W.L. & A.R. Herzog (1992) 'Collecting data about the oldest old: problems and procedures', in Suzman, R.M., D.P. Villis, K.G. Manton (eds.) *'The Oldest Old'*, Oxford: Oxford University Press
- Rohner, S.J. & R. Miller (1980) 'Degrees of familiar and affective music and their effects on state anxiety', *Journal of Music Therapy*, 17(1) pp.2-15
- Rollman, G., B. (1998) 'Culture and pain', in Kazarian, S. & D.R. Evans (eds.) New York: Oxford University Press
- Ronald, M. (1975) 'The McGill pain questionnaire: major properties and scoring methods', *Pain*, 1 (3) pp.277-299
- Ronald, M. (1987) 'The short-form McGill pain questionnaire', *Pain*, 30 (2) pp.191-197
- Rooney, R., D. Nesdale, R. Kane, J. Hattie, R. Goonewardene (2012) 'The development of the universal ethnic identity scale (UEIS) for use in an Australian context', *Australian Psychologist*, 47 (4) pp.238-248
- Rorke, M.A. (2001) 'Music therapy in the age of enlightenment', *Journal of Music Therapy*, 38 (1) pp.66-73
- Rosow, I. (1962) 'Old age: One moral dilemma of an affluent society', *The Gerontologist*, 2 (4) pp.182-191
- Rosow, I. (1976) 'Status and role change through the life span', in Binstock, R.H. & Shanas, E. (eds.) *The Handbook of Aging and the Social Sciences*, New York: van Nostrand Reinhold
- Ross, S. (2010) 'Ageing Population. Population Trends', Available at (www.kingsfund.org.uk/time-to-think-differently/trends/demography/ageing-population), (accessed: 21 Feb 2012)
- Rowe, J.W. & R.L. Kahn (1997) 'Successful aging', *The Gerontologist*, 37 (4) pp.433-440

- Rowntree, B.S. (1947) '*Old People: survey committee on the problems of ageing and the care of old people*', The Nuffield Foundation
- Roy, R. & M. Thomas (1986) 'A survey of chronic pain in an elderly population', *Canadian Family Physician Medecin De Famille Canadien*, 32 pp.513-516
- Roy, M., Peretz, I. & P. Rainville, P. (2008) 'Emotional valence contributes to music-induced analgesia', *Pain*, 134 (1) pp.140-147
- Royal College of Nursing policy report (04/2010) Care homes under pressure – an England report, Available at: (http://www.rcn.org.uk/_data/assets/pdf_file/0006/314547/Policy_Report-Care_Homes_under_pressure_final_web.pdf), (accessed 5 Sept 2012)
- Rupp, D.E. & Vodanovich, S.J. (1997) 'The role of boredom proneness in self-reported anger and aggression'. *Journal of Social Behavior and Personality*, 12 (4) pp.925-936
- Saarikallio, S. (2011) 'Music as emotional self-regulation throughout adulthood', *Psychology of Music*, 39 (3) pp.307-327
- Salimpoor, V.N., M. Benovoy, G. Longo, J.R. Cooperstock & R.J. Zatorre (2009) 'The rewarding aspects of music listening are related to degree of emotional arousal', *PloS One*. 4 (10) e7487
- Salimpoor, V.N., M. Benovoy, K. Larcher, A. Dagher & R.J. Zatorre (2011) 'Anatomically distinct dopamine release during anticipation and experience of peak emotion to music', *Nature Neuroscience*, 14 (2) pp.257-262
- Salimpoor, V.N. & R.J. Zatorre (2013) 'Neural interactions that give rise to musical pleasure', *Psychology of Aesthetics, Creativity, and the Arts*, 7 (1) pp. 62-75
- Särkämö, T., S. Laitinen, M. Tervaniemi, A. Numminen, M. Kurki & P. Rantanen (2012) 'Music, emotion, and dementia: insight from neuroscientific and clinical research', *Music and Medicine*, 4 (3) pp.153-162
- Schaefer, M.T. & D.H. Olson (1981) 'Assessing intimacy: the pair inventory', *Journal of Marital and Family Therapy*, 7 (1) pp.47-60
- Schäfer, T., M. Smukalla & S. Oelker (2013) 'How music changes our lives: a qualitative study of the long-term effects of intense musical experiences', *Psychology of Music*, 42 (4) pp.525-544
- Scalfari, E. (1 October, 2013) '*The pope: How the church will change*' Repubblica
- Schellenberg, E.G. (2005) 'Music and cognitive abilities', *Current Directions in Psychological Science*, 14 (6) pp.317-320

- Schorr, A. (1993) 'Music and pattern change in chronic pain', *Advances in Nursing Science*, 15 (4) pp.27-36
- Schuessler, K.F. (1948) 'Social background and musical taste', *American Sociological Review*, 13 (3) pp.330-335
- Schulz, K.F., I. Chalmers, R.J. Hayes & D.G. Altman (1995) 'Empirical evidence of bias: dimensions of methodological quality associated with estimates of treatment effects in controlled trials', *Journal of the American Association*, 273 (5) pp.408-412
- Schwarz, N. & Strack, F. (1991) 'Evaluating one's life: a judgment model of subjective well-being' in Strack, F., M.Argyle, N. Schwarz (eds.) *Subjective well-being: an interdisciplinary perspective*, Oxford: Pergmaon Press
- Scott-Maxwell, F. (1979) *The Measure of My Days*, Penguin Books, New York
- Sequeira, H., P. Hot, L. Silvert & S. Delplanque (2009) 'Electrical autonomic correlates of emotion', *International Journal of Psychophysiology*, 71 (1) pp.50-56
- Shadish, W.R., X. Hu, R.R. Glaser, R. Kownacki & S. Wong (1998) 'A method for exploring the effects of attrition in randomized experiments with dichotomous outcomes', *Psychological Methods*, 3 (1) pp.3-22
- Shamash, K., K. O'Connell, M. Lowy & C. Katona (1992) 'Psychiatric morbidity and outcome in elderly patients undergoing emergency hip surgery: a one-year follow-up study', *International Journal of Geriatric Psychiatry*, 7 (7) pp.505-509
- Shankar, K., M. Walker, D. Frost & M. Orrell (1999) 'The development of a valid and reliable scale for rating anxiety in dementia (RAID)', *Aging & Mental Health*, 3 (1) pp.39-49
- Sheikh, J.I., R.D. Hill & J.A. Yesavage (1986) 'Long-term efficacy of cognitive training for age-associated memory impairment: a six-month follow-up study' *Developmental Neuropsychology*. 2 (4) pp.413-421
- Sheldon, J.H. (1948) 'The social medicine of old age', *Report of an Enquiry in Wolverhampton*, London: Oxford University Press
- Sherratt, K., A. Thornton & C. Hatton (2004) 'Emotional and behavioural responses to music in people with dementia: an observational study', *Aging & Mental Health*, 8 (3) pp.233-241
- Shiffrin, R.M. (1988) 'Attention' in Atkinson, R.C., R.J. Herrnstein, G. Lindzey & R.D. Luce (eds.) (2nd) *Stevens' Handbook of experimental psychology*, New York: Wiley, pp.739-811
- Shmotkin, D. (2011) 'The pursuit of happiness: alternative conceptions of subjective well-being', in Poon, L., W. & J. Cohen-Mansfield (eds.) *Understanding well-being in the oldest old*, Cambridge: Cambridge University Press

- Siedliecki, S.L. & M. Good (2006) 'Effect of music on power, pain, depression and disability', *Journal of Advanced Nursing*, 54 (5) pp.553-562
- Silvestrini, N., V. Piguet, C. Cedraschi & M. R. Zentner (2011) 'Music and auditory distraction reduce pain: emotional or attentional effects?' *Music and Medicine*, 3 (4) pp.264-270
- Sinclair, I., R. Parker, D. Leat, J. Williams (1990) *The Kaleidoscope of Care: a reveiw of research on welfare provision for elderly people*, National Institution for Social Work, London: Research Unit
- Sixsmith, A. & G. Gibson (2007) 'Music and the wellbeing of people with dementia', *Ageing and Society*, 27 (01) pp.127-145
- Sloboda, J.A. (1985), 'The musical mind: The cognitive psychology of music'. Oxford: Clarendon Press
- Sloboda, J.A. & S.A. O'Neill 2001, 'Emotions in everyday listening to music,' in Juslin, P. and J. Sloboda, (eds.) *Music and Emotion: Theory and Research*, New York: Oxford University Press
- Sloboda, J.A., S.A. O'Neill & A. Ivaldi (2001) 'Functions of music in everyday life: an exploratory study using the experience sampling method, *Musicae Scientiae*, 5 (1) pp.9-32
- Sloboda, J.A. (2003) 'Show me emotion', *New Scientist*, 29 pp. 40-42
- Sloboda, J., A. Lamont & A. Greasley (2009) 'Choosing to hear music: motivation, process, and effect' in Hallam, S., I. Cross, & M. Thaut (eds.) *The Oxford handbook of music psychology* (pp.431-440). Oxford: Oxford University Press
- Small, G.W. (1996) 'Recognizing and treating anxiety in the elderly', *The Journal of Clinical Psychiatry*, 58 (3) pp.41-47
- Smit, F., H. Comijs, R. Schoevers, P. Cuijpers, D. Deeg & A. Beekman (2007) 'Target groups for the prevention of late-life anxiety', *The British Journal of Psychiatry*, 190 (5) pp.428-434
- Smith, J. & P.B. Baltes, (1999) 'Trends and profiles of psychological functioning in very old age', in P. Baltes & K. Mayer (eds.) *The Berlin Aging Study: aging from 70 to 100*, Cambridge: Cambridge University Press
- Smith, A. & K. Nicholson (2001) 'Psychosocial factors, respiratory viruses and exacerbation of asthma', *Psychoneuroendocrinology*, 26 (4) pp.411-420
- Smith, J., M. Borchelt, H. Maier & D. Jopp (2002) 'Health and well-being in the young old and oldest old', *Journal of Social Issues*, 58 (4) pp.715-732

- Snowdon, J., E. Burgess, R. Vaughan & R. Miller (1996) 'Use of antidepressants, and the prevalence of depression and cognitive impairment in Sydney nursing homes, *International Journal of Geriatric Psychiatry*, 11 (7) pp.599-606
- Sofaer, B., A.P. Moore, I. Holloway, J.M. Lambert, T.A. Thorp & J. O'Dwyer (2005) 'Chronic pain as perceived by older people: a qualitative study', *Age and Ageing*, 34 (5) pp.462-466
- Sommer, A., (22 November, 2010), 'Music saved me from the Nazis', The Times
- Sommers, J. & S.J. Vodanovich (2000) 'Boredom proneness: its relationship to psychological-and physical-health symptoms', *Journal of Clinical Psychology*, 56 (1) pp.149-155
- Sorkin, D., K.S. Rook & J.L. Lu (2002) 'Loneliness, lack of emotional support, lack of companionship and the likelihood of having a heart condition in an elderly sample', *Annals of Behavioural Medicine*, 24 (4) pp.290-298
- Spielberger, C.D. (1983) 'Manual for the state-trait anxiety inventory STAI (form Y) (" self-evaluation questionnaire")', Palo Alto: Consulting Psychologists Press Inc.
- Spintge, R. (1989) 'The anxiolytic effects of music', *Rehabilitation, Music and Human Well-being*, Saint Louis: MMB Music
- Spintge, R. (2000) 'Music in anesthesia and pain therapy', *AINS-Anesthesie Intensivtherapie Notfallmedizin Schmerztherapie*, 35 (4) pp.243-261
- Standley, J.M. (1991) 'The effect of vibrotactile and auditory stimuli on perception of comfort, heart rate, and peripheral finger temperature', *Journal of Music Therapy*, 28 (3) pp.120-134
- Standley, J. (1995) 'Music as a therapeutic intervention in medical and dental treatment: research and clinical applications' in Wigram, T., B. Saperston, R. West (eds.) *The Art & Science of Music Therapy: a handbook*, New York: Routledge (first published: 1995)
- Standley, J. (2000) 'Music research in medical treatment', *Effectiveness of Music Therapy Procedures: Documentation of Research and Clinical Practice*, 3 pp.1-64
- Starbucks, 2008, The Way I See It #267, Oliver Sacks. Available at:
(http://listography.com/amandal/quotes/inspirational_quotes_from_starbucks_cups)
(Accessed 13/2/15)
- Steptoe, A. & Whardle, J. (2011) 'Positive affect measured using ecological momentary assessment and survival in older men and women', *Proceedings of the National Academy of Sciences*, 108 (45), 18244-18248
- Stevenson, C. (1995) 'Non-pharmacological aspects of acute pain management', *Complimentary Therapy Nursing Midwifery*, 1, pp.77-84

- Stolee, P., L.M. Hillier, J. Esbaugh, N. Bol, L. McKellar & N. Gauthier (2005) 'Instruments for the assessment of pain in older persons with cognitive impairment', *Journal of the American Geriatrics Society*, 53 (2) pp.319-326
- Strunk, W.O. (1966) *Byzantine Music in the Light of Recent Research and Publication*, International Congress of Byzantine Studies (XIII), Main Papers
- Suzman, R.M., K.G. Manton & D.P. Willis (1995) 'Introducing the oldest old' in Suzman, R.M., D.P. Willis & K.G. Manton (eds.), New York: Oxford University Press
- Suzman, S. & J. Beard (2011) *Global Health and Aging*, Available at: (http://www.who.int/ageing/publications/global_health.pdf-172K) (accessed 6 May 2012)
- Tan, X., C.J. Yowler, D.M. Super & R.B. Fratianne (2012) 'The interplay of preference, familiarity and psychophysical properties in defining relaxation music', *Journal of Music Therapy*, 49 (2) pp.150-179
- Tannock, C. & Katona, C. (1995) 'Minor depression in the aged', *Drugs & Aging*, 6 (4) pp.278-292
- Taylor, L.J. & K. Herr (2003) 'Pain intensity assessment: a comparison of selected pain intensity scales for use in cognitively intact and cognitively impaired African American older adults', *Pain Management Nursing*, 4 (2) pp.87-95
- Taylor, H.J. (2005) *Assessing the Nursing and Care Needs of Older Adults: a patient-centred approach*, Oxford: Radcliffe Publishing
- Taylor, M. (2009) 'Ageism is Deep-Seated by Now is the Time to Tackle it', The Resolution Foundation
- Ter Bogt, T.F., J. Mulder, Q.A. Raaijmakers & S.N. Gabhainn (2011) 'Moved by music: a typology of music listeners', *Psychology of Music* 39 (2) pp.147-163
- Thaut, M.H. & W.B. Davis (1993) 'The influence of subject-selected versus experimenter-chosen music on affect, anxiety, and relaxation', *Journal of Music Therapy*, 30 (4) pp.210-223
- Thaut, M.H. (2005) 'The future of music in therapy and medicine', *Annals of the New York Academy of Sciences*, 1060 (1) pp.303-308
- The Committee on Bible Translation, (2010) *The Bible New International Version*, London: Hodder and Stoughton
- The King's Fund (no date) *Ageing population: population trends*, Available at: (<http://www.kingsfund.org.uk/time-to-think-differently/trends/demography/ageing-population>) (accessed 5 January 2015)
- Thomas, D.L. & E. Diener (1990) 'Memory accuracy in the recall of emotions', *Journal of Personality and Social Psychology*, 59 (2) pp.291-297

- Thompson, R.A. (1991) 'Emotional regulation and emotional development', *Educational Psychology Review*, 3 (4) pp.269-307
- Tinker, A. (2012) 'The experience of being a participant in research', Presented at Micra PhD Student Conference, Manchester
- Trappe, H. (2012) 'The effect of music on human physiology and pathophysiology', *Music and Medicine*, 4 (2) pp.100-105
- Turk, D.C. & A. Okifuji (2002) 'Psychological factors in chronic pain: evolution and revolution', *Journal of Consulting and Clinical Psychology*, 70 (3) pp.678-690
- Turk, D.C. & R.H. Dworkin (2004) 'What should be the core outcomes in chronic pain clinical trials?' *Arthritis Research and Therapy*, 6 pp.151-154
- Turk, D.C., E.S. Monarch & A.D. Williams (2004) 'Assessment of chronic pain sufferers' in Hadjistavropoulos, T., K.D.Criag, (eds.) *Pain: psychological perspectives*, New Jersey: Lawrence Erlbaum Associates
- Turner, J.A., R.A. Deyo, J.D. Loeser, M. von Korff & W.E. Fordyce (1994) 'The importance of placebo effects in pain treatment and research', *Journal of the American Medical Association*, 271 (20) pp.1609-1614
- Turner, J.A., J.D. Loeser, R.A. Deyo & S.B. Sanders (2004) 'Spinal cord stimulation for patients with failed back surgery syndrome or complex regional pain syndrome: a systematic review of effectiveness and complications', *Pain*, 108 (1) pp.137-147
- UK National Statistics (2013) *Older People*, Available at:
<http://www.statistics.gov.uk/hub/population/ageing/older-people/index.html>
 (accessed 10 December 2013)
- Unruh, A.M. (1996) 'Gender variations in clinical pain experience', *Pain*, 65 (2) pp.123-167
- Van Den Bosch, I., V.N. Salimpoor & R.J. Zatorre (2013) 'Familiarity mediates the relationship between emotional arousal and pleasure during music listening', *Frontiers in Human Neuroscience*, 7
- Van Eijck, K. (2001) 'Social differentiation in musical taste patterns', *Social Forces*, 79 (3) pp.1163 - 1185
- Van Hout, H.P.J., A.T.F. Beekman, E. De Beurs, H. Comijs, H. van Marwijk, M. de Haan, W. van Tilburg & D.J.H. Deeg (2004) 'Anxiety and the risk of death in older men and women,' *The British Journal of Psychiatry*, 185 (5) pp.399-404
- Västfjäll, D. (2002) 'Influences of current mood and noise sensitivity on judgments of noise annoyance', *The Journal of Psychology*, 136 (4) pp.357-370

- Västfjäll, D., P.N. Juslin & T. Hartig (2012) 'Music, subjective wellbeing, and health: the role of everyday emotions', in MacDonald, R., G.Kreutz, L. Mitchell (eds.) *Music, Health & Wellbeing*, Oxford: Oxford University Press
- Vaupel, J.W. & K.G. Kistowski (2008) 'Living longer in an ageing Europe: a challenge for individuals and societies', *European View*, 7 (2) pp.255-263
- Verhaeghen, P., N. Geraerts & A. Marcoen (2000) 'Memory complaints, coping, and well-being in old age: a systemic approach', *The Gerontologist*, 40 (5) pp.540-548
- Victor, C.R., S.J. Scambler, A. Bowling & J. Bond (2005) 'The prevalence of, and risk factors for, loneliness in later life: a survey of older people in Great Britain', *Ageing and Society*, 25 (3) pp.357-375
- Victor, C., S. Scambler & J. Bond (2008) *The social world of older people: understanding loneliness and social isolation in later life: understanding loneliness and social isolation in later life*, Maidenhead, Open University Press
- Victor, C. (2012) 'Loneliness in care homes: a neglected area of research?', *Aging Health* 8 (6) pp. 637-646
- Victor, C.R. & Bowling, A. (2012) A longitudinal analysis of loneliness among older people in Great Britain, *The Journal of Psychology*, 146 (3) pp.313-331
- Victor, C.R., V. Burholt & W. Martin (2012) 'Loneliness and ethnic minority elders in Great Britain: an exploratory study', *Journal of Cross-Cultural Gerontology*, 27 (1) pp.65-78
- Villarreal, E.A.G., E. Brattico, L. Vase, L. Østergaard & P. Vuust, P. (2012) 'Superior analgesic effect of an active distraction versus pleasant unfamiliar sounds and music: the influence of emotion and cognitive style', *PloS One*, 7 (1): e29397
- Visscher, T.L. & J.C. Seidell (2001) 'The public health impact of obesity', *Annual Review of Public Health*, 22 (1) pp.355-375
- Voss, J.A., M. Good, B.Yates, M.M. Baun, A. Thompson & M. Hertzog (2004) 'Sedative music reduces anxiety and pain during chair rest after open-heart surgery', *Pain*, 112 (1) pp.197-203
- Wallace, R.B., F.J. Kohout & P.L. Colsher (1992) 'Observations on interview surveys of the oldest old' in Suzman, R.M., D.P. Willis & K.G. Manton (eds.) *The Oldest Old*, New York: Oxford University Press
- Wanless, D. (2002) 'Securing our future health: taking a long-term view', *London: HM Treasury*, 16
- Watson, D. (1988) 'Intraindividual and interindividual analyses of positive and negative affect: their relation to health complaints, perceived stress, and daily activities', *Journal of Personality and Social Psychology*, 54 (6) pp.1020-1030

- Weiner, D., B. Peterson & F. Keefe (1999) 'Chronic pain-associated behaviors in the nursing home: resident versus caregiver perceptions', *Pain*, 80 (3) pp.577-588
- Weiss, R.S. (1973) *Loneliness: the experience of emotional and social isolation*, Cambridge, MA, US: The MIT Press Classics
- Whipple, B. & H.J. Glynn (1992) 'Quantification of the effects of listening to music as a non-invasive method of pain control', *Scholarly Inquiry for Nursing Practice*, 6 (1) pp.43-58
- World Health Organisation (2001) *Mental Health: a call for action by world health ministers*, Geneva: WHO
- World Health Organisation (2011) *Mental Health: depression*, Geneva: WHO
- Wigram, T. & C. Gold (2012) 'The religion of evidence-based practice: helpful or harmful to health and wellbeing?' in MacDonald, R., G. Kreutz & L. Mitchell (eds.) *Music, Health & Wellbeing*, Oxford: Oxford University Press
- Williams, D.A. & B.E. Thorn (1989) 'An empirical assessment of pain beliefs', *Pain*, 36 (3) pp.351-358
- Wilson, R.S., K.R. Krueger, S.E. Arnold, J.A. Schneider, J.F. Kelly, L.L. Barnes, Y. Tang & D.A. Bennett (2007) 'Loneliness and risk of Alzheimer's disease', *Archives of General Psychiatry*, 64 (2) pp.234-240
- WRVS, (2011) 'Gold Age Pensioners: valuing the socio-economic contribution of older people in the UK'. Available at: (<http://www.kingsfund.org.uk>) (accessed 5 July 2012)
- Yates, P., B. Fentunan & A. Dewar (1995) 'Pain: the views of elderly people living in long-term residential care settings', *Journal of Advanced Nursing*, 21 (4) pp.667-674
- Yesavage, J.A. (1988) 'Geriatric depression scale', *Psychopharmacology Bulletin*, 24 (4) pp.709-711
- Zajicek, M. (2001) 'Interface design for older adults' in *Proceedings of the 2001 workshop on universal accessibility of ubiquitous computing: providing for the elderly*, pp.60-65
- Zajonc, R.B. (1968) 'Attitudinal effects of mere exposure', *Journal of Personality and Social Psychology*, 9 (2 p 2) pp.1-27
- Zerhusen, J.D., K. Boyle & W. Wilson (1991) 'Out of the darkness: group cognitive therapy for depressed elderly', *Journal Psychosocial Nursing and Mental Health Services*, 29 (9) pp.16-21
- Zigmond, A.S. & R.P. Snaith (1983) 'The hospital anxiety and depression scale', *Acta Psychiatrica Scandinavica*, 67(6) pp.361-370

Ziv, N. (2004) 'The relationship between social circumstances and recounted musical experiences',
Presented at 8th International Conference on Music Perception and Cognition, Evanston,
Illinois

Zoja, L. (1983) 'Working against Dorian Gray: analysis and the old', *Journal of Analytical
Psychology*, 28 (1) pp.51-64

APPENDIX A

QUESTIONNAIRE TO ESTABLISH MUSIC PREFERENCE

Name _____ Date _____ Time _____

Do you enjoy listening to music? Yes _____ No _____

Do/did you play a musical instrument? Yes _____ No _____

If yes, what did you play? _____

Would you like to tell me about it?

If yes, is there a piece that you remember playing or something that you would have liked to have been able to play?

Do/did you enjoy singing? Yes _____ No _____

If yes, when do/did you sing? (e.g.: around the house, church choir, a group).

Could you tell me how often you listen to music nowadays?

_____ *Not very often*

_____ *Some days*

_____ *Most days*

_____ *Every day*

Do you think that you listen to music as much as you did before coming to the care home?

_____ *Yes*

_____ *No*

If no, can you tell me why?

Do you listen to music on the radio?

_____ *Yes*

_____ *No*

If yes, what radio station/s do you listen to?

Do you like to dance?

_____ *Yes*

_____ *No*

If yes, what kind of music do/did you like to dance to?

I'm going to make some CDs for you. Can you give me some ideas about the kind of music that you enjoy and that you would like to listen to?

What types of music do you enjoy?

_____ *Country and Western*

_____ *Classical*

_____ *Spiritual/Religious*

_____ *Big Band/Swing*

_____ *Folk*

_____ *Blues*

_____ *Jazz*

_____ *Rock and Roll*

_____ *Easy Listening*

_____ *Cultural or Ethnic (examples: Czech polkas, Ravi Shankar Indian sitar)*

_____ *New Age*

_____ *Musicals*

_____ *Pop*

_____ *Opera*

_____ *Choral*

_____ *Military*

_____ *Brass Band*

_____ *Any other*

Are there types of music that you don't enjoy?

Do you like to listen to _____ singing _____ instrumental music _____ both?

Are there any instruments that you particularly like to listen to?

_____ *Guitar*

_____ *Singing*

_____ *Piano*

_____ *Violin*

_____ *Cello*

_____ *Brass*

_____ *Harp*

_____ *Flute*

_____ *Oboe*

_____ *Clarinet*

_____ *Sax*

_____ *Classical Guitar*

_____ *World instruments*

_____ *Accordion*

_____ *Organ*

_____ *Other*

Are there any instruments that you don't enjoy listening to?

Can you remember buying your first record? Do you remember what it was?

Are there any particular performers, singers or bands that you enjoy listening to?

Have you ever thought about what you would choose for your Desert Islands Discs? If so, what would you choose?

Do you have any favourite composers, pieces or songs? _____

Can you think of any music that makes you feel happy? _____

Can you think of any music that makes you relax? _____

Can you think of any music that you find particularly moving? _____

Is there any music that reminds you of a particular place or event?

Would you prefer to listen to short pieces or longer pieces? _____

Would you prefer to listen to lively upbeat music or something more slow and relaxed?

Could you tell me how important music is to you?

_____ *Very Important*

_____ *Important*

_____ *Quite Important*

_____ *Not Important*

Do you think music is more or less important than when you were younger?

Do you think that listening to music will help you/be of benefit to you?

Yes _____ No _____ *I don't know* _____

APPENDIX B

DEMOGRAPHIC QUESTIONS

Name _____ Date _____ Time _____

Gender: _____ *male* _____ *female* _____ *prefer not to say*

Can you tell me how old you are? _____

Are you:

_____ *married*

_____ *living as married*

_____ *widow/widower*

_____ *divorced*

_____ *single*

Do you have any children?

_____ *yes*

_____ *no*

Can you tell me how long you have lived here? _____

Where were you born? _____

Where have you lived since? _____

Where did you go to school? _____

At what age did you leave school? _____

Did you go on to higher education or evening classes? _____

What was your occupation/s? _____

What is your ethnic origin?

_____ Asian/Asian British (Indian, Pakistani, Bangladeshi, other)

_____ Black/Black British (Caribbean, African, other)

_____ Chinese/Chinese British

_____ Other Chinese background

_____ Middle Eastern

_____ Mixed – White and Black Caribbean, White and Black African, White and Asian

_____ Other mixed background

_____ White British

_____ White Irish

_____ Other White background

_____ Other Ethnic background

_____ Not known

_____ Prefer not to say

Do you have any trouble hearing me?

_____ *not at all*

_____ *some*

_____ *quite a lot*

_____ *a lot*

APPENDIX C

QUESTIONNAIRE FOR THE ASSESSMENT OF PAIN, DEPRESSION AND ANXIETY

Name _____ Date _____ Time _____

How would you describe your overall health?

Very bad 1 _____ quite bad 2 _____ moderate 3 _____ quite good 4 _____ very good 5 _____

Do you ever have any pain, discomfort, aching, soreness or hurt that bothers you?

_____ Yes _____ No

If yes, do you have the discomfort etc. every day, almost every day or occasionally?

_____ *every day* _____ *almost every day* _____ *occasionally*

If yes, how long have you had this discomfort? _____

Do you have any discomfort now? _____ yes _____ no

Do you take any medication for it?

_____ *Yes* _____ *No*

If yes, do you take it every day or just when you need it?

_____ *Every day* _____ *As needed*

Does it help you?

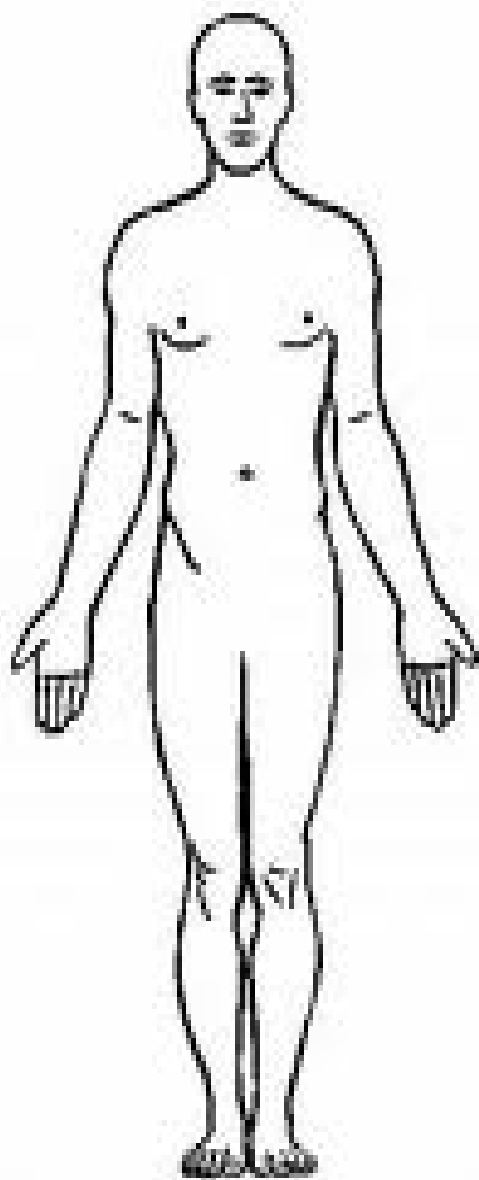
_____ *Not at all*

_____ *A little*

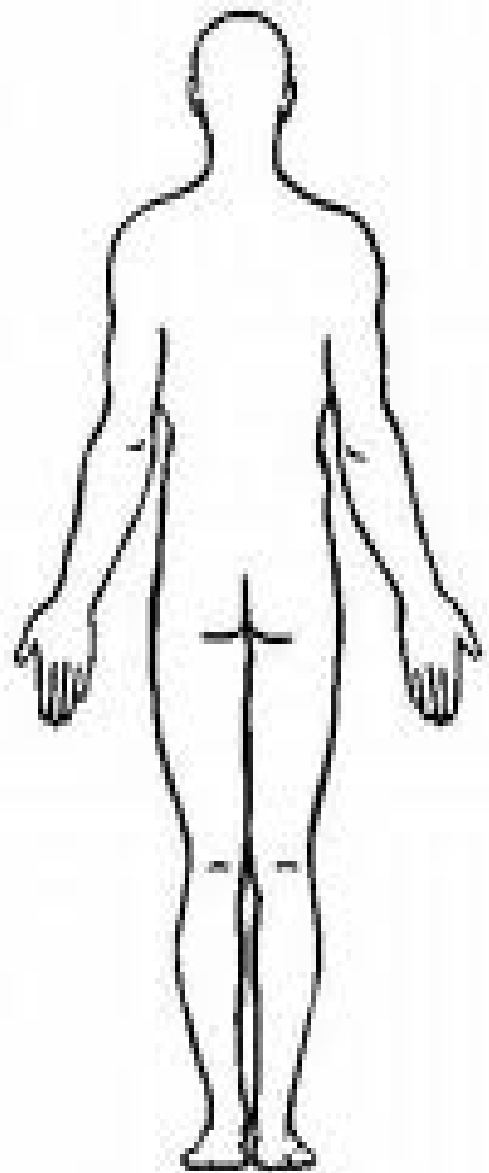
_____ *Quite a lot*

_____ *Completely*

Can you show me on the diagram where you get pain or discomfort? Or, if you get discomfort occasionally, where is it most likely to be?



Front



Back

Is the discomfort?

_____ *occasionally*

_____ *continuous*

If it is occasional, how often do you experience it?

_____ *occasionally*

_____ *most days*

_____ *every day*

If you do get aches/discomfort, what time of day is it most likely to be?

_____ *morning*

_____ *afternoon*

_____ *evening*

_____ *night-time*

Can you tell me the differences in your pain when you are resting and moving?

Can you choose the word that you think describes your pain the best

Moderate

Just noticeable

No pain

Strong

Mild

Severe

Excruciating weak

Are there any activities that you would like to do but can't because of discomfort?

_____ (open conversation)

Does the discomfort affect your:

Mood (eg. angry, tearful, grumpy)

_____ *Not at all*

_____ *a little*

_____ *quite a lot*

_____ *a lot*

Sleep

_____ *not at all*

_____ *a little*

_____ *quite a lot*

_____ *a lot*

Appetite

_____ *not at all*

_____ *a little*

_____ *quite a lot*

_____ *a lot*

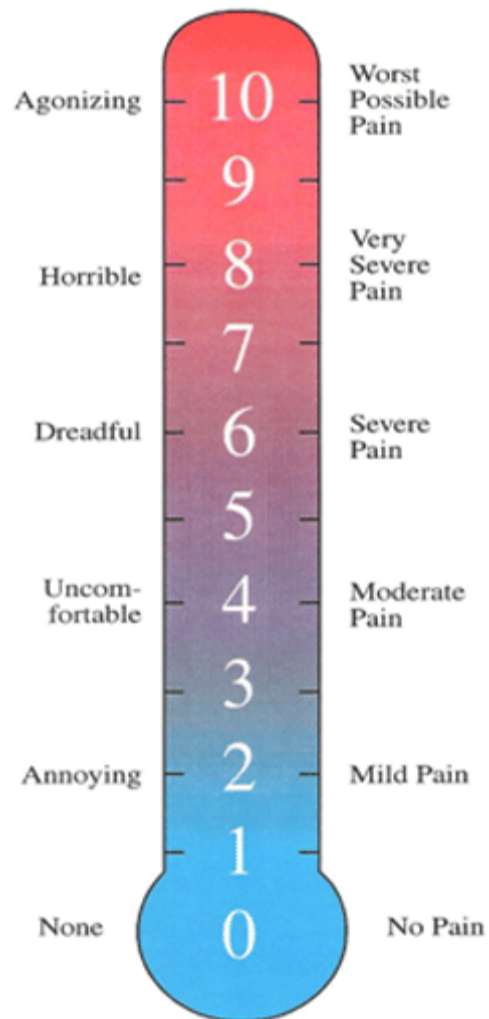
Can you tell me how you feel right now? There are no right or wrong answers.

	4	3	2	1
Do you feel calm?	<i>Not at all</i>	<i>A little</i>	<i>Quite a lot</i>	<i>A lot</i>
Do you feel nervous or on edge?	<i>Not at all</i>	<i>A little</i>	<i>Quite a lot</i>	<i>A lot</i>
Do you feel irritable or annoyed?	<i>Not at all</i>	<i>A little</i>	<i>Quite a lot</i>	<i>A lot</i>
Do you feel anxious?	<i>Not at all</i>	<i>A little</i>	<i>Quite a lot</i>	<i>A lot</i>
Do you feel relaxed?	<i>Not at all</i>	<i>A little</i>	<i>Quite a lot</i>	<i>A lot</i>
Are you worried?	<i>Not at all</i>	<i>A little</i>	<i>Quite a lot</i>	<i>A lot</i>
Do you feel satisfied?	<i>Not at all</i>	<i>A little</i>	<i>Quite a lot</i>	<i>A lot</i>
Do you feel lonely?	<i>Not at all</i>	<i>A little</i>	<i>Quite a lot</i>	<i>A lot</i>
Do you feel bored?	<i>Not at all</i>	<i>A little</i>	<i>Quite a lot</i>	<i>A lot</i>
Do you look forward to each day?	<i>Not at all</i>	<i>A little</i>	<i>Quite a lot</i>	<i>A lot</i>
Do you have enough energy to carry out usual activities?	<i>Not at all</i>	<i>A little</i>	<i>Quite a lot</i>	<i>A lot</i>

Over the last week, have you been bothered by any of the following?

	1 rarely/not at all	2 a little	3 moderately	4 most of the time
Have you been bothered by little interest or pleasure in doing things?				
Have you felt low at all?				
Have you had trouble falling or staying asleep, sleeping too much or having restless sleep?				
Have you been feeling too tired to do anything? Is everything an effort?				
Poor appetite or over eating?				
Have you felt cheerful?				
Have you had any trouble concentrating – newspaper or TV. Trouble keeping your mind on what you are doing?				
Moving or speaking v slowly or being restless, fidgety				

PAIN DISTRESS/ INTENSITY SCALE



APPENDIX D

QUESTIONNAIRE: THE EFFECT OF MUSIC

During these three weeks:

Have you enjoyed listening to the music? Yes _____ No _____

If yes, can you tell me what you particularly enjoyed?

Was there anything that you didn't enjoy?

Do you think the music has had an effect on you? Yes _____ No _____

If yes, in what way?

Has it helped you cope with discomfort? _____ Yes _____ No

Has it helped your mood? _____ Yes _____ No

How have you been able to operate the music player?

APPENDIX E

CARE STAFF QUESTIONNAIRE

I would be very grateful if you could answer a few questions about _____

Please tick the answer that best describes his or her general health and mood.

The answers will be kept strictly confidential.

How would you rate his/her physical health?

_____ *Very poor*

_____ *Poor*

_____ *Good*

_____ *Very good*

How would you describe his/her general mood?

_____ *even tempered*

_____ *a little irritable*

_____ *quite bad tempered*

_____ *very bad tempered*

How much physical pain do you think he/she has?

_____ *none*

_____ *mild pain*

_____ *moderate pain*

_____ *severe pain.*

Do you think he/she is anxious?

_____ *No anxiety*

_____ *Mild anxiety*

_____ *Moderate anxiety*

_____ *Severe anxiety*

Do you think he/she is depressed?

_____ *No depression*

_____ *Mild depression*

_____ *Moderate depression*

_____ *Severe depression*

Do you have any further comments?

Thank you very much for your help.

APPENDIX F

THEMATIC ANALYSIS: AN EXAMPLE

The identification of themes common to the participants was made through careful scrutiny of the notes taken and recordings made during the interviews. Reference was also made to diary entries made at the end of each day's interviewing. Potential themes were identified at each stage of the data collection and a final list confirmed at its conclusion. Inclusion was dependent on the frequency of references to each theme.

Three participants, Rachel, Jill and Lily (pseudonyms have been used) were interviewed at different times of year, in different homes. Rachel was aged 98, Lily was 85 and Jill was 88. All were widows. Data from one interview from each of them were analysed for common themes. Two were in the control group at the time of the interview and there were therefore no common themes relating to music.

There were three superordinate themes: loss, fear and pain. The themes and subcategories, together with supporting quotations and observations are shown in the table below.

Loss of control over life		
Loss of choice	Of friends/companions	'I sit at a table with someone who I just cannot stand. It irritates you immensely'. 'It would make me sick to go and eat with the others'.
	Of activities	'I'd love to go out when I feel like it' Restricted music listening due to neighbours' complaints. People tell her 'to switch that rubbish off'. Dislike of home's activities.
	Of food	'If only I could have some herbs'. 'The food is a disaster. It makes me fat'.
Loss of freedom	To go out	'I'd love to go out and do some shopping' 'I don't want any more restrictions'. 'It's just to have your freedom'.
	To go home	'I'd like to be able to leave' 'The first thing I wanted to do was to run away'. 'I just wish I didn't have to be here'. 'Being here is a disaster'.
Loss of independence	To do things unaided	'Half the fun is doing it yourself' 'I wish I didn't need help' 'I can't shop for myself, I can't cook for myself'. 'I have to find someone friendly to ask the sizes, the prices and so on'. 'I need someone to help me to go home'. 'I can't help myself'.
Loss of mobility and function		I'd love to have the strength to be able to go on a bus and into town'. "If I could have a book, I'd be happy, but I can't. I can't watch television, it is so frustrating'. 'I haven't done much walking today, I've rested more, it helps'. 'My legs, they are old, they can't carry on'.

Loss of social contact	Boredom	<p>'These four walls, nothing's happening'.</p> <p>'I can't watch television anymore. Sitting here is deadly'.</p> <p>'There's not much I have to concentrate on'.</p>
	Loss of engagement with the outside world	<p>'It's just to know what's going on'.</p> <p>'My daughter is my only visitor'.</p> <p>Pain restricted Lily's desire and ability to go out.</p>
<i>Fear</i>		
Fear of falling		<p>'I'm apprehensive when I have to go to the loo. I have to get from sitting on the bed there, to holding on to the door there.'</p>
Fear of further deterioration	Fending it off	<p>'I could stay in bed all day, but I don't want to be bed-bound'.</p> <p>'I have to learn to balance'.</p> <p>'I do try to do regular exercises'.</p>
	Admitting to it	<p>'I have a little worry. What the future is going to hold and how long I can live like this.'</p> <p>'I know I am not going to get any better'.</p> <p>'I have a feeling of helplessness. I start thinking, "What's the use?"'</p> <p>'My health is going down'.</p> <p>'I have one foot in the grave'.</p>
<i>Pain</i>		
Fluctuating		<p>'Aches and pains come and go'.</p> <p>'Some days they are bad and some days they are liveable with'.</p>

Effects on mood	Anxiety	'Every time I get up, I feel stressed'.
	Low mood	'When it's intense, it affects my mood and I can't be bothered with people, I tell them to go away'. 'There are a lot of days in the week that are difficult to get through'.
	Mobility	'I am restricted in my movements'.

APPENDIX G

AN EXAMPLE OF A MUSIC PROGRAMME

<i>Concerto in D major (after Vivaldi) BWV 972, Allegro ma non tanto and Adagio</i>	J S Bach
<i>Waltz from Coppélia</i>	Léo Delibes
<i>Waltz of the Flowers, from The Nutcracker</i>	Tchaikovsky
<i>Love Changes Everything, from Aspects of Love</i>	Andrew Lloyd Webber
<i>Cavatina, from The Deer Hunter</i>	Stanley Myer
<i>The Castle Walls, played by the Royal Scots and Dragoon Guards</i>	Traditional
<i>Highland Cathedral, played by the Royal Scots and Dragoon Guards</i>	Traditional
<i>Singin' in the Rain, from the musical</i>	Herb Brown
<i>L'ultima Canzone, sung by José Carreras</i>	Tosti
<i>Amazing Grace, sung by Katherine Jenkins</i>	Traditional
<i>Cantique de Jean Racine, Op. 11</i>	Gabriel Fauré

APPENDIX H



ETHICS COMMITTEE

PARTICIPANT CONSENT FORM

Title of Research Project:

The effect of regular listening to preferred music on pain, depression and anxiety in older people in long term care

Brief Description of Research Project:

120 participants will be drawn from a number of care homes in the UK. Each participant will be interviewed by the researcher prior to the start of the project and then once-weekly for the six weeks following. Interviews will be recorded. Participants will be asked to listen to their own choice of music for a minimum of 30 minutes each day for a period of three weeks. Music players will be provided.

Investigator Contact Details:

Fiona Costa
Applied Music Research Centre
Southlands College
University of Roehampton
80 Roehampton Lane
London
SW15 5SL

costaf@roehampton.ac.uk

0208 392 3465

Consent Statement:

I agree to take part in this research _____ (Initials)

I agree to be photographed _____ (Initials)

I am aware that I am free to withdraw at any point during the research, either verbally or by word of mouth, and without a reason. I understand that if I also wish to withdraw any data resulting from my previous involvement with the study, I must let the researcher know at the

time of my notice to withdraw or at least within 28 days of my notice to withdraw. If this is not done, the researcher reserves the right to use the data. I understand that the information I provide will be treated in confidence by the investigator and that my identity will be protected in the publication of any findings.

I understand that due to the nature of the study, there is the possibility that minor changes in my physical or mental health might become apparent to the researcher. As a result of this and giving full consideration to my health and wellbeing, occasional breaches of confidentiality might become necessary with pertinent information being provided to a carer, partner or other family member. Should this be required, then all breaches in confidentiality will be carried out in accordance with the advice and ethical guidelines issued by the British Psychological Society.

Name

Signature

Date

Please note: if you have any physical or emotional discomfort during the interview, please would you discuss this with the care staff. If you have a concern about any aspect of your participation or any other queries please raise this with the investigator. You may also contact the Director of Studies who is overseeing the project.

Director of Studies Contact Details:

Dr Nigel Marshall
Applied Music Research Centre
Southlands College
University of Roehampton
80 Roehampton Lane
London
SW15 5SL
n.marshall@roehampton.ac.uk
0208 392 3856

However, if you wish to contact an independent party then please contact the Head of Department whose details are provided below

Head of Department Contact Details:

Name: Marilyn Holness (OBE)
Department of Education
Froebel College
Roehampton University,
Roehampton Lane,
SW15 5PU
Email: M.Holness@roehampton.ac.uk
Telephone: 020 8392 3374